The Potential of Using Mobile Social Media Applications for Language Learning : A Case Study in Saudi Higher Education

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Institute of Education,

Faculty of Education, Health and Wellbeing

February 2020

Signature .....

Date .....

Declaration

I hereby certify that this submission is my own work and contains no material which has been accepted for the award of any other degree or diploma of the University or other institute of higher learning.

Signature: *Abdulrahman Alshabeb*

Acknowledgment of Relevant Publications and Conferences

Peer-reviewed Paper:

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Conference Papers and Posters:

Alshabeb, A. (2019). "Using Mobile Social Media Applications in a Saudi Higher Education*",* poster presented in the international Academic Conference on Education at St Anne's College, Oxford University, November.

Alshabeb, A. (2019), "The Use of Mobile Social Media Media Applications by EFL students: A case Study in Saudi Higher Education", paper presented at the Technological and pedagogical innovation in language learning Conference, University of Wolverhampton, April.

Alshabeb, A. (2018), "Move from CALL to MALL, Contextual Learning", paper presented at the 17th World Conference on Mobile and Contextual Learning (mLearn2018), Concordia University, USA, Chicago, November.

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Alshabeb, A. (2016). "Introducing Connectivism and Social Media Applications to Saudi Learning Context". paper presented at the Social Media in the Arab World Conference, University of Reading, September.

Outstanding Poster Award (see Appendix 1)

Alshabeb, A. (2018) "The Use of Mobile Social Media Applications for Language Learning: A Case Study of Higher Education in Saudi Arabia", CCSCLIL 2018 : 20th International Conference on Computer-Supported Collaborative Learning and Individual Learning, London, UK.

Translation:

Translated a relative book of an important resource to the thesis from English language into Arabic, which was distributed among Saudi Universities:

Traxler, John and Kukulska-Hulme, Agnes. (2016). *Mobile Learning: The Next Generation.* London: Routledge.

Abstract

This study aims to harness young people's ubiquitous social media use to facilitate language education and explore how mobile devices and social media applications can promote and provide more autonomous, collaborative, motivated, and contextual learning experiences in a Saudi Arabian university setting. Hence, this study is grounded in the tenets of connectivism learning theory of collaboration and autonomy, and a design-based research (DBR) methodological approach, which entails developing solutions to problems and then testing out interventions, has been implemented. The research uses mixed methods approach, in which quantitative and qualitative data were obtained. The groups comprised two classes at a Saudi Arabian university - one with 14 males and the other with 14 females - who participated in a blended learning approach, utilising online educational materials, as well as classroom delivery, as part of the teaching process.

The study has drawn on DBR to identify appropriate design principles for use in mobile language learning before investigating the ability of mobile social media applications to facilitate an interactive spontaneous learning environment by exploring whether these technologies can assist EFL students in collaborative learning that takes advantage of students' familiarity with mobile phones, on the one hand, and social media applications, on the other. It was found that providing rich learning opportunities via the use of mobile apps is useful in the Saudi context as there are typically limited language learning opportunities and socio-cultural restrictions concerning face-to-face student interactions especially between genders due to cultural restrictions. Hence, the moderating faculties of social media applications WhatsApp and Instagram allowed a multitude of media to be shared with and between students, who were better able to connect and collaborate. Therefore, the study's findings significantly extend the understanding of mobile learning, demonstrating its capability to offer more out-of-class contextual opportunities in scenarios that are characterised by limited language learning opportunities and socio-cultural restrictions of face-to-face student interactions, particularly in traditionally gender segregated societies such as Saudi Arabia. Moreover, communication between male tutor and female students in this way supports the Saudi government's Vision 2030 program by preparing them for working and further study in mixed environments.

Of particular note, students co-contributed to the design change and were motivated and engaged to experience the new learning opportunities afforded through the use of mobile

apps, also leading to some improvements in their actual learning. Therefore, this study recommends for 'reforming' EFL education in Saudi Arabia by allowing students' voices to be heard to enhance their contribution to the learning process and meet the needs of the new technologically minded generation. A crucial implication of the study is that independence and autonomy in the practice of learning via social media apps should be encouraged and supported, as while it is contrary to typical approaches to teaching in Saudi Arabia, it was found to be well received by the students in this study. Thus, the findings on the affordance and acceptance of mobile social media applications can facilitate policymaking to counter the authoritarian practices and teaching attitudes prevalent in Saudi higher education.

Keywords

CALL, MALL, Constructivism, Connectivism, EFL in Saudi Arabia, Collaborative Learning, Social Media, Mobile Social Media Applications, Mobile Design Principles

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List of Abbreviations

CALL: Computer-Assisted Language Learning

CLT: Communicative Language Teaching

EFL: English as a Foreign Language

ESL: English as a Second Language

HE: Higher Education

MALL: Mobile Assisted Language Learning

MFL: Modern Foreign Language

MMS: Multimedia Messaging Service

MPAL: Mobile-Device-Supported Peer-Assisted Learning

PC: Personal Computer

PDA: Personal Digital Assistant

PDF: Portable Document Format

SA: Saudi Arabia

SM: Social Media

SMALL: Social Media Assisted Learning Language

SR: Stimulated Reflection

TL: Target Language

WAN: Wide Area Network

WLAN: Wireless Local Area Network

3G: Third Generation Mobile Network

(See section 1.2.1 for in-depth definitions of some the key terms).

1 Chapter 1 Introduction to the Research

1.1 Overview of the Thesis

The focus of this study is the development of theoretically based and contextually tested design principles relevant to the integration of mobile learning and social media applications in Saudi English as a Foreign Language university classes to enhance contextual and collaborative language learning, and to capitalise on out-of-class language learning opportunities. To achieve this, a design-based research study was conducted with two groups of Saudi first year university English Language students over a 16-week semester. Feedback from students regarding their perceptions and experiences of the use of the social networking mobile medium to maintain contextual and collaborative learning environment was investigated through observations, stimulated recall sessions, and focus group interviews. The study explores the students' perceptions of the value of mobile social media applications in learning English as a Foreign Language (EFL) and as a Second Language (L2). These male and female students, from the gender segregated campus Al-Imam Mohammad Ibn Saud Islamic University (IMSIU) in Saudi Arabia, had completed the basic entry requirements of the Language Department, and English is their major area of study. This introductory chapter will provide the context behind the importance of the English language in Saudi Arabia and particular features and aspects of learning and teaching in the Islamic faith and Middle Eastern culture that are imbued in the education system of Saudi Arabia. The value of using mobile social media applications to promote independent student learning outside of the classroom is considered against a background of tradition and culture impacted upon by modern technology and practice. This impact can be partly seen in the new pedagogical practices being promoted by the government as the Kingdom modernises its business and economic framework pursuant to its Vision 2030 initiative for fundamental economic and societal reform (Saudi Vision 2030, 2018). This chapter will also introduce the research

problem to be addressed, along with the rationale for the implementation of mobile social media applications in an EFL blended learning setting in Saudi Arabia, which forms the scope of the study. The research questions and the justification for these are also presented. Figure 1.1 illustrates the layout of the chapter:

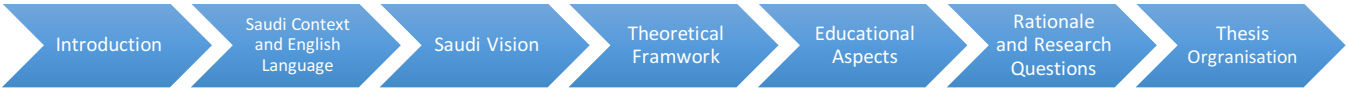


Figure 1.1 Contents of Chapter One

1.2 Background to the Study

Mobile smartphones have become a vital tool of the 21st Century that allows users to maintain contact and communicate with people, to organise appointments, arrange entertainment, and manage business and education. In the course of this thesis, the importance of mobile technologies to Saudi EFL students will be made evident through observation, and statistically. Saudi Arabia has a substantial population of young people who are becoming ever more digitally adept and who are increasingly connected with each other, particularly through social media tools such as WhatsApp, Twitter, YouTube, and Snapchat (Global Media Insight, 2018). This study aims to consider ways in which such social media tools can be used to develop more collaborative approaches to learning that can be used out of the classroom.

The Saudi Arabian Vision 2030 initiative and the National Transformation Programme 2020 introduced changes to the operations of 24 government departments (Vision 2030, 2018). These departments, including the Ministry of Education, are now emphasising the importance of change to the framework and provision of learning, and aim to introduce digital

communications technology into schools and universities by the end of 2020. This will entail incorporating a variety of fixed and mobile hardware into the pedagogical environment of the EFL classroom, which, to date, has customarily used traditional teacher-led methods of rote learning through teacher presentation and textbooks (Fareh, 2015). Given the shortcomings of the aforementioned didactic language teaching approaches, it is suggested that the creation of an alternative teaching and learning environment that might improve learning outcomes and student motivation to learn the target language (TL) would be a valuable development.

Ascertaining whether Saudi students' use of mobile phone technologies and social media platforms can be extended and exploited to support institutional methods of learning could lead to more collaborative learning activities which could promote student motivation and create richer learning experiences. Learners can develop internal structures in their thinking processes which allow them to biologically assimilate knowledge and accommodate it into a framework that gives it value for use (Bringuier and Piaget, 2002). Therefore, teachers should provide a learning environment in which mobile devices and social media applications can potentially bring relatively novel ways of accessing information and learning in different ways that are more collaborative and communicative. This is the context that Siemens' (2004, 2005) connectivist theory applies to, predicated as it is on interactions in learning groups that are nurtured through a diverse use of resources, both digital and otherwise. Beyond the relative individuality of behaviourist and cognitive learning, community-based connectivist interaction opens up access to a range of learning methods. This encourages a more active accumulation of knowledge through experimentation with sources and engagement with the subject and with others through the faculties of digital technology (Bell, 2009).

The next section will provide some definitions of the most used terms in this thesis.

1.2.1 Definition of Terms

This section defines the key terms used throughout this thesis:

Authentic task activities

An authentic task or activity is a learning assignment that resembles an exercise performed in a non-educational setting, which requires students to apply a broad range of knowledge and skills (Roth, 1995). The function of an authentic task is “to show students relevance and stimulate them to develop competencies that are relevant for their future professional or daily lives" (Gulikers *et al*., 2005, p.510).

Collaborative and Cooperative Learning

Both terms refer to the learning practice where two or more students work together in small groups to acquire knowledge through different activities such as problem solving, discussing issues or questions, or working together in a task-based project. It entails “positive interdependence” in learning (Agawa, 2013). For the purposes of the study, both terms have been used interchangeably.

Communicative Language Teaching (CLT)

CLT is an approach in which communicative competence, including the ability of the learner to use knowledge to make their meaning clear in the second language, is the goal of language teaching (Richards and Rodgers, 2001). It aims to engage language learners in meaningful and real-life communication in the target language and its culture, to enable them to use the L2 efficiently in different contexts.

Connectivism

Connectivism is a theoretical framework for understanding learning in the digital age. It emphasises how internet technologies, such as web browsers, search engines, wikis, online

discussion forums and social networks, contribute to new avenues and ways of learning (Siemens, 2005).

Language Literacy

The term used herein refers to the L2 skills learners need to be able to read and write accurately and effectively, using the grammar and linguistic rules of the target language, and understanding how language functions through written texts (Steet, 1995; Gee, 1996).

Mobile Assisted Language Learning: MALL

The *MALL environment* refers to a model based on constructivist and communicative language learning, using mobile devices in the accumulation of extra-classroom knowledge and developing a "personalised, spontaneous, informal and ubiquitous" style of autonomous learning (Mosavi et al, 2012, p.309). The emphasis is on the student as an active participant in their learning, unfettered by classroom restrictions.

Student-Centred Model

The student is seen as an active participant in the learning process, undertaking an integral role in determining their goals and objectives, and observing their progress in learning. This is in direct contrast to the traditional teacher-led pedagogical process where the student is expected to be a passive receptor of knowledge without input; it is the transfer of responsibility for learning to the student based on autonomy, with an interdependent relationship with the tutor (Lea et al., 2003).

Task- and Project-Based Learning

Task- and project-based learning is achieved through the act of 'doing', or in language use, 'communication', whether in words, writing or the creation of images. It is a component of the communicative approach in constructivist learning, where structured and authentic activities have a central role in understanding. Reflecting the principles of connectivist theory

is achieved through the independent use of digital technology in the accumulation and evaluation of knowledge (Duke *et al*., 2013). These activities and tasks are major components of the teaching methodology around which a CLT course may be organised (Littlewood, 2007).

Teacher-Centred Model

The students' role in this pedagogical model is to receive the information delivered to them by the instructor in their presentation of required curriculum knowledge (Ahmed, 2013). The traditional Saudi language teaching model promotes 'passive learning' where the teacher is the only source of knowledge (Schwier and Misanchuk, 1993, p.13).

Traditional Language Teaching

A teaching method can be defined as the "general principles, pedagogy and management strategies" used in the classroom (Renau, 2016, p.82). In the Saudi university context, the traditional teaching method entails teaching second languages through an emphasis on grammar, pronunciation and linguistic rules, thereby neglecting the importance of the communicative competence and collaborative interaction promoted by the DBR project conducted in this study.

Having presented the key terms, the following sections set the scene for the study by highlighting the current Saudi context and the changes taking place concerning foreign language learning in this context, including those outlined in the Vision 2030.

1.3 Context of Study: History, Faith, Culture in Saudi Arabia

The Kingdom of Saudi Arabia, which came into being after a turbulent time in the region's history, comprises a society, a system of law, a framework for education, and the regulation of all aspects of life which are all founded on the practice of Islam, commensurate with its status as home to the most sacred sites of the faith (Fallatah, 2012). As a strict, faith-based

monarchy, it draws together a diversity of regional interests into a unique culture of disparate tribes with a primary obligation to the practice of Islam and loyalty to the ruling Royal Family, which creates societal cohesion despite considerable environmental and economic diversity (Alsubaie and Jones, 2017). The appreciation of the imperative of change in pedagogical and learning practice forms an essential basis for the continued economic success of the Kingdom, and is reflected in initiatives introduced by the government, with the enthusiastic approval of the Royal Family. The influence of the UK and the US in the early development of the economy of the Kingdom, and their integral role in the exploitation of its natural wealth, and, thereafter, the status of English as the perceived language of global business, has made English language learning essential since the 1930s (Alrashidi and Phan, 2015). However, educational practice is strictly regulated by faith determinants and change in the nature of knowledge, and how it is communicated is regulated by the religious authorities in Riyadh, the centre of government (Alsubaie and Jones, 2017).

In 1976, a separate Ministry of Higher Education was established and did not come under the broad, consolidated Ministry of Education remit until 2014 (Ministry of Education, 2018). As a major part of this restructuring and coordination of education policy for the economic global advancement and attraction of international academics and business, financial incentives ensured a growth in the student population to over 1,300,000, with over 64,000 faculty staff (Almarwani, 2011; Al-Wabil, 2015). The higher education institutional portfolio is comprised of 28 public universities, and 11 private universities, 29 private colleges (Ministry of Education, 2018). Education remains key to the future of the Kingdom: its quality has improved exponentially whilst retaining adherence to the fundamental principles and values predicated on the Faith of Islam, its tenets and culture. The educational institutions in the Kingdom are single sex, with male and female learning on different campuses; they are separate, but equal (Ministry of Education, 2018). However, there are a few faculties, such as

medicine, for example, in which there are mixed gender classes, and with the new Saudi policy, there is a call for mixed classes. Still, observance of traditional standards of behaviour are embedded in the culture, although there is equal entitlement of female students to the same education as their male counterparts, albeit separately (Alhamed *et al.*, 2007).

The Saudi economy was founded on oil wealth - a finite resource which has nevertheless provided the nation with a substantial capacity to manage social and welfare development as well as affording it an enviable influence in international affairs and diplomacy (AI-Farhan, 2012). The global economy has, however, undergone exponential change, and the market demand for products has undermined the economy of the Kingdom in the medium term, with portents of considerable more difficulty in the future (Gassan Al-Kibsi, 2015). Saudi Arabia also has a growing population which needs education and employment to fulfil the changing needs of the Kingdom as it opens its domestic markets to the world through membership of global trade and financial bodies (Ashwan, 2012).

The most manifest example of the effect of the National Transformation Programme and Vision 2030 initiatives is in the promotion of the role of women in higher education and business, ameliorating the previous conservatism of tradition. Culture, governance, and business in Saudi Arabia have, since its inception, been the preserve of men, an authority claimed to be predicated on Islamic principles (AlMunajjed, 2013). While this study is not the place to debate Western-Eastern concepts of equality, justice, and social value of the genders, the Vision 2030 initiative is particularly strident in the 'new' perceived role of women (Najm, 2019). Nevertheless, education remains segregated and change is gradual, incurring much debate from entrenched male interests. Anecdotally, however, this author, on regular visits to his home country, notes a subtle but significant transition, with less adherence to clothing traditions - a change that should not be underestimated - and greater promotion of the female role in society and the future of the Kingdom. As a result, the

increasing use of technology and its effect on the education of the populace makes the Kingdom more 'modern' and 'international' and enables it to meet the demands of the modern global age.

1.4 EFL in Saudi Arabia

The English language is accorded significant status in Saudi Arabia, and it is the medium of instruction in many academic disciplines, including the schools of Medicine, Pharmacy, Aviation, and Science (Abalhassan, 2012). There is also a growing emphasis on English proficiency as a requirement of employment by most major companies in Saudi Arabia. English has historically been considered the language of international business in the Kingdom (Alshahrani, 2016) and EFL has received significant attention from the Saudi Ministry of Education as an essential subject in intermediate and secondary schools.

1.4.1 Importance of English Language Learning in Saudi Arabia

English language has always been a central part of learning in the Kingdom. The Middle Eastern region, including Saudi Arabia, has historically been an arena of political, cultural, and military competition, as well as a major source of exchange and trade (Alshahrani, 2016). Although the Kingdom, united in the 1930s, has not suffered from European colonial rule, or indeed influence over its Islamic culture, it has been dependent on Western expertise for the exploitation of its natural oil wealth (Al-Seghayer, 2005). English language learning is related to this commercial relationship with the UK and US (Mahboob and Elyas, 2014) and has led to the development of a curriculum across all levels of education to facilitate employment and participation in what was essentially the sole basis of Saudi economic success.

In 1930, the Ministry of Education initiated EFL teaching in elementary schools. In 1942, this was revised so that EFL teaching did not commence until the newly created intermediate and secondary school programmes (Alfallaj, 1995). From 1942 until 2006, EFL continued to be

an essential part of the education system from Grade 7 until Grade 12. In 2006, however, the Ministry of Education decided to commence EFL earlier, in Grade 5. During intermediate and secondary education, students receive four 45-minute sessions of EFL per week. By the time they enter university, therefore, students will have completed a minimum of six years of EFL study.

At the tertiary level, all students must complete one compulsory EFL course during their four years of bachelor's degree study. This EFL course focuses mainly on the grammar completed during their intermediate and secondary school studies. This compulsory EFL course (namely Eng 101) is completed in one semester, with students attending a 50-minute lecture three times per week over 15-17 weeks. The course is purely instructional and focuses on grammar skills and short reading passages followed by comprehension questions. The common teaching method in this course, as in all the previous EFL courses in the Saudi government education system, is either the grammar-translation or audio-lingual method.

While the unsatisfactory achievements of students in EFL education in Saudi Arabia are well recognised in the literature (Al-Hajailan, 2003; Alhamdan, 2008) and by the Saudi media (Aldakheel, 2013; Alisa, 2014), studies that have explored the problems of EFL teaching are limited and not directed towards finding a remedy. There is still uncertainty as to what causes the high level of unsatisfactory outcomes, with studies pointing to factors such as inadequate teaching skills, level of difficulty, and students' late start in EFL learning (Alshaer, 2017). Studies such as Shemary (2008) and Javid *et al.* (2012) show that after six years of EFL study in public secondary schools, Saudi students were still unable to express themselves effectively in English.

Al-Ahaydib (2012) and Zaid (2014) believe that students' negative attitudes towards EFL and their lack of motivation, rather than pedagogy, were responsible for the poor outcomes,

although the two are interlinked. Research indicates that despite the time and effort dedicated to EFL teaching, the education framework is unfit for the purpose of the new Saudi economy (Alhamdan, 2012; Al-Hajailan, 2013). Parents too are concerned for their children's economic future, and employer stakeholders look to the government for improvement; this is a regular subject of media attention.

It is arguable that insufficient encouragement for English language learning and traditional teacher-presentation of knowledge undermines motivation (Alizadeh, 2016). Interaction with peers and tutors, both inside and outside of the classroom, through the use of a more technology-based programme of convergent learning will, it is believed, improve competence in language accumulation and use. This is integral to advancing the Vision 2030 initiative for the development of a more diverse future economy, and this study can potentially enhance learning opportunities and increase motivation so that this future economic aim is more easily achieved.

1.4.2 Educational Technology in Higher Education

Researchers such as Alhamed *et al.* (2007) and Almarwani (2011) have asserted that the higher education system in Saudi Arabia is not keeping pace with changing times and educational demands despite government policy and initiatives. Moreover, the current crisis due to the Covid 19 virus, and the resulting limitations on movement, means that understanding how to make the best use of technology such as smartphone apps has become even more important; therefore, this research provides a timely contribution to informing current teaching practices.

Al-Wabil (2015) is more positive in his assessment, suggesting that technology is in the process of transforming pedagogy and the higher education curriculum in the Kingdom to meet national demands in a technologically changing world. Students and teachers have the

benefit of multi-media facilities and universities have advanced learner use of technology. Video conferencing, the internet, campus Wi-Fi and virtual learning place public universities at an advantage over private institutions (Al-Wabil, 2015). These facilities enable the learning environment to evolve in a more inclusive manner, opening higher education up to a larger student population through the provision of distance and virtual learning programs (Ageel, 2013). Some $15.7 bn was invested in public education by the government in 2011, but the move toward electronic learning had been slow (Allam, 2011). This was rectified by the Vision 2030 initiatives announced a year later.

1.4.3 The Saudi Vision 2030

The economic transformation programme of Vision 2030 is a development of the National Transformation Programme formulated to achieve "governmental operational excellence, improving economic enablers, and enhancing living standards through (i) accelerating the implementation of primary and digital infrastructure projects and (ii) engaging stakeholders in identifying challenges, co-creating solutions, and contributing to the implementation of the program's initiatives" (Saudi Government Website). It is a powerhouse for the overarching Vision 2030 initiative, speeding up the progress of the technological revolution in Saudi society and, in this context, education (Patalong, 2017). These initiatives, the most recent of several fundamental plans for social and economic reform, were implemented to provide a basis for economic reform to diversify the provision it makes to the more globally directed Saudi policies. This has required government ministries and institutions to restructure in order to facilitate change. Its basic aim is to improve education provision and learning outcomes to increase competence in international market competition and thus drive diversified economic growth and domestic entrepreneurship. As English is the language of international business, Saudi Arabia needs to improve English pedagogical and learning

practices and outcomes to thrive in an environment of cultural and commercial change (Al Harbi, 2017).

Traditional faith and the cultural imperatives of teacher control and the presentation of knowledge in a lecture-orientated higher education system in Saudi universities has not produced outcomes which advance the purposes of the initiative, as students require greater engagement with their learning (Meguid and Collins, 2017). Technology provides students with access to the knowledge and tools they require in order to thrive and compete in a modern global commercial environment. Instructors and institutions must examine and monitor improvements in teaching and learning methods based on improving outcomes (Lee and Cherner, 2015). Learner smartphones and social media applications are some of the most popular technological developments which aid access to learning.

Vision 2030 emphasises digital communication as the foundation for the reform of Saudi business in the development of new relationships with global partners (Saudi vision 2030, 2018). This has heralded technological transformations of the classroom, but greater attention must be paid to mobile digital developments which expand opportunities for learning, and which have been somewhat overlooked by the plans. The rapid emergence of increasingly flexible communication networks, not least social media, and the resultant access to and dissemination of knowledge, means that English language learning and communication can draw on the imagination of students and teachers (Baruah, 2012).

The business model for reform demanded by Vision 2030 is easily adaptable to the education framework. Indeed, education may be viewed as an activity with the purpose of self-improvement, the ultimate goal of the student, facilitated by the teacher (Sedova et al, 2016). Figure 2 is indicative of how the government plans to integrate reforms, and it is a worthy

undertaking for institutions and teachers to make their learners aware of how the initiatives will work to aid motivation and contribute to their future outcomes.

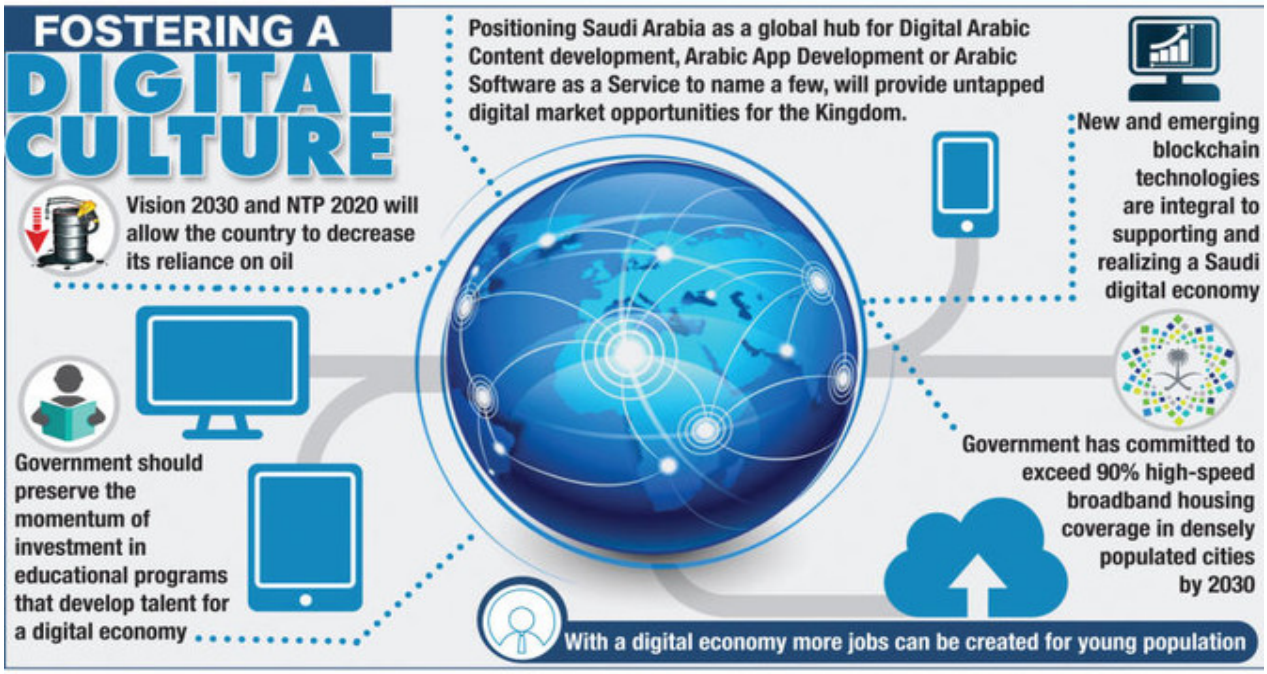


Figure 1.2 The government model for achieving Saudi Arabia's Vision 2030 (Saudi Vision 2030, 2018)

1.4.4 Societal and Educational Change in the Saudi Arabian Vision 2030 Initiative

It is too early to call the technological changes a transformation, but much is being lost to the future of the Kingdom and its global socio-economic advancement by failing to utilise the talents of the female half of its population. No society can afford a future that does not value and promote its human resources to the benefit of all, just as it values its natural, physical resources. This increased focus of women integration has resulted in the broadening of the education framework and personal improvement opportunities to include women, aided by the use of social media platforms to draw the world's attention to the position of women in Arab society, and the promotion of equal rights (Odine, 2015). In terms of English language learning and, indeed, broader education advancement, the King Abdullah Scholarship Program (KASP) 2015 has facilitated travel for women to the UK and US to pursue post-graduate opportunities, albeit in the company of a male family-member chaperone (Alsqoor,

2018). Societal practice and traditions in higher education mean the genders remain segregated, as this is seen as being a strict application of Islamic principles. Al Alhareth *et al.* (2015) explain how despite the 1970 education policy of Saudi stating that women have an equal right to education, and while major changes are now occurring in Saudi Arabia regarding this issue, gender segregation has restricted Saudi women from studying specific fields, and it will take time for this to change. Women face barriers in some universities due to restricted access to library materials because of gender segregation, as well as social norms that may prevent study abroad alone, despite the government now allowing it (Al Alhareth *et al*. 2015). Therefore, collaboration through social media technologies may provide a useful route forward that supports change.

Moreover, given the fact that the participants in this study are both male and female students using mobile social media applications, it is essential to take into consideration the cultural representation of Saudi Arabian women within society in addition to the learning environment and mobile phone use habits. The Saudi culture and society, unlike many other modern societies, has cultural values that remain traditional in many ways and society tends to be over-protective of women. There could be some pressure on young females to obey family rules. This becomes especially significant in a study such as this one, where participants usually exchange communications in the evenings – a time when many families may not permit their daughters to receive phone calls or engage in online social interaction, particularly if they understand the messages are from a male tutor. However, Saudi Arabia has changed due to rulings of the young Crown Prince, prince Mohammed Bin Salman, who has imposed new policies, particularly the vision 2030, which have changed the society as well. During the course of this study, women have been given more freedom in various areas, including driving a car and travelling without a male relative.

The next section further explores technological change in the specific context of Saudi Arabia.

1.4.4.1 Technological Change and Mobile Learning in Saudi Arabia

It is a premise of this study that the availability of mobile social media applications provides opportunities to students for self-improvement, and increased autonomy in their learning. The researcher is conscious of the fact that any study of learner autonomy cannot be separated from an understanding of the social and cultural context within which that learning takes place and thus this study of the utility of using mobile social media application is undertaken with that sensitivity in mind (as outlined in the final paragraph of the previous section). This is not believed to compromise the need for objectivity in the research, but all education is subject to the cultural awareness of the society in which it takes place.

The concept of mobility and access to education is of particular importance in Saudi Arabia, a territorially large and diverse area of urban and rural institutional provision, serving different needs and meeting the diverse demands of its learners. Each area has its particular communications requirements, variously met, of teachers and their students, administrators and those subject to institutional obligations. Institutional settings and places of education may not be easily accessible and the Aafaq initiative is encouraging the use of communications technology aims to fill gaps in provision through distance and e- learning programmes, even though they are considered by some to be time-consuming to administer and expensive (Almarwani, 2011; Al-hujran, *et al.,* 2014).

It has to be wondered in the context of traditional learning whether such views are a reaction to the shift in responsibility and control from teacher to student. Mobile devices and learning software are attractive to the student population, relieving digitally aware and savvy learners of dependence on the classroom lecture and textbook for their future economic success

(Almarwani, 2011). However, M-learning is still a somewhat revolutionary concept in Saudi education, competing with long-practiced traditions and perceptions, and it is only by demonstrating its value to the institutional providers of learning that the autonomy it offers might be respected and adopted in Saudi (Al-Hujran *et al*., 2014).

Statistics show that Saudi Arabia has the largest number of mobile phone users per head worldwide. Therefore**,** a new concept, Mobile Assisted Language Learning (MALL), has been adopted that develops the capacity of technology to improve EFL teaching in Saudi Arabia; research into MALL within Saudi context is considered limited, however, and few institutions even consider mobile devices to be an integral learning tool (Alhazmi, 2016). There is, for example, no academic examination of the use of MALL to support a teaching methodology that would support and enhance a combination of the current didactic grammar-based approach and a more practical, communicative-based learning (Alseghayer, 2017). Its use in government-funded universities in Saudi Arabia remains minimal and superficial, with limited resources and technical support (AlKahtani, 2014). Nevertheless, the Saudi government and EFL departments are increasingly focusing on the implementation of enhanced technology in learning in general, and EFL in particular (Ministry of Education, 2015). However, to achieve positive results in EFL learning, such attention must be accompanied by more focused studies on the incorporation of mobile technology into the learning environment on a sound pedagogical basis. More discussion on mobile-assisted collaborative learning/language learning is provided in Chapter Two.

It should be acknowledged that the researcher is a Saudi national and has therefore been immersed in the society under study; hence the next section presents the researcher's biography and what led him to conduct this study.

1.5 Biography of the Researcher: Personal and Profession Motivation

In pursuit of the principles of ethical validity and to acknowledge the researcher's awareness of the potential for bias, which will be reflected on throughout each step of the study, some biographical background is necessary. The researcher-author is a Saudi teacher in higher education, privileged in upbringing and socio-economic background, with a profoundly supportive family, a post-graduate education, and a successful professional career. Inspiration for my career and public progression has been afforded by many local, national, and international educators and practitioners, who have inspired me throughout my life, primarily my mother, the leader of the family unit, who is direct, outspoken, and has always been there to help and support me.

In the professional arena, I began my career as a classroom lecturer following successful academic progression. In Saudi Arabia, educators are highly respected, with teachers considered to be leaders and role models for student development. I was appointed deputy academic coordinator at a Saudi college, a role that provided the opportunity to explore new approaches to teaching and learning at university level, through interaction and communication with colleagues and managers. The role of college lecturer at a Saudi Arabian university required a level of interaction with both male and female colleagues, challenging the paternalistic environment. Considerable support was offered by my leaders at the university, which facilitated my professional development and the gaining of expertise in the academic pursuit of the Applied Linguistics adjunct to the technology of learning.

This Doctorate journey in a UK-based educational environment has also been a profoundly illuminating experience, undertaken with the assistance of an inspiring mentor and supervisor, alongside other students from around the world, who have further widened my perspective on educational provision. This experience has made me more aware of the effect of biases, personal perspectives and past social and professional experiences in relation to the

tutor's role in higher education, learning and the development of teaching methodologies. While I have always questioned a traditionally paternal and didactic approach to education, achieving my degree in the English Language; my post-graduate qualifications, and my teaching of language studies in Saudi universities for some years, has given further weight to this. In addition, I am more aware of the importance of supporting students who are struggling and of the possibility of using mobile technology to assist in providing that support. Whilst the author-researcher is not conscious of any specific bias which may result from his background, it is important to remain aware of the educational perspectives and cultural demands of the Kingdom, and some of the more obvious issues are addressed in the Methodology Chapter. The following section explains the theoretical framework that has guided this study, followed by the educational concepts that are relevant to it.

1.6 Theoretical Framework

A guiding principle of modern education in the West is 'active learning', which is experiential in terms of its requirement for student participation in the process of knowledge accumulation and use (Freeman *et al.*, 2014). Connectivist learning theory complements this process by encouraging learners to develop strategies to manage and use their knowledge (Siemens, 2005, 2004; Downes, 2008). It is therefore integral to the study's research aim and objectives of examining traditional learning theories to assist in ascertaining how the use of mobile learning fits into the philosophies and theories upon which education practices are based. Theories pertaining to the value of mobile learning are still emerging as efforts focus on investigating the practical uses of the technology in different nations and educational contexts (Jantjies and Joy, 2014). As a new and continually changing option, digital and communications technology will necessarily require a transformation in the way knowledge is provided, accumulated, managed and embedded in second language education (Kopinska, 2017).

Until recently, mobile learning research focused primarily on the accessibility of mobile technologies in different locations. The mobility of learners and connectedness created by today's online technology and social networking platforms were a relatively minor focus, perhaps due to the more recent and growing importance of the latter as access to internet functions became more readily available (Gowans, 2017). Nevertheless, as Traxler (2009, 2015) notes, advocates of mobile learning are attempting to define and conceptualise mobile learning in terms of students' mobility and learning. Again, such attempts illustrate the need for theoretical guidelines for mobile learning practices.

This study focuses on networks of information and contacts to seek solutions to problems that require the learner to collect, classify, construct, and then prioritise information according to the tasks undertaken (Wright, 2010). Mattar (2018, p.3) asserts that the broad connectivist theory of learning requires educators to "use the time to understand the real and actual interests of learners, and, based on this information, to incorporate learning activities that have real relevance for each learner". Activity and experiential-based learning form the basis of the examination of mobile devices as integrated teaching tools. Craig and Van Lom (2010, p.21) argue that "neither mobile technology nor learning theory is the answer to our education", but both of these can help enhance the process of learning. By adopting the related concept of Siemens' (2005) connectivism, learners will gather information and enhance their own learning through a network via trusted people in a classroom community. While this is not the only way to learn, this study will exploit the mobile use of social media as a tool to build collaboration to support independence and extend learning.

Mobile devices and the internet provide the learner with resources that enhance collaborative learning, self-directed learning, and engagement. Technology can also make authentic and informal learning opportunities available to the learner so that they can practise the target language in real-life situations and acquire intercultural knowledge (Chakowa, 2018).

Teachers have a broad choice of mobile applications to direct the learning of their students, and using connectivism guidelines can have considerable potential to impact positively on the study participants' attitudes and motivation toward EFL learning in a Saudi Arabian context (Alshabeb and Almaqrn, 2018). Both theories seek to place the student at the centre of the learning environment. This study proposes an examination of how language learners manage the experience of face-to-face classes complemented by the use of a virtual learning environment and social media to reflect on their learning. In Figure 1-3, a theoretical framework for empirical research is suggested based on MALL, SMALL (Social Media Assisted Learning Language) and Connectivism, and their impact on the participants' attitudes towards and motivation for learning EFL in Saudi Arabia through Communicative Language Teaching (CLT). Blended learning is being introduced to a course that was previously taught in traditional face-to-face mode.

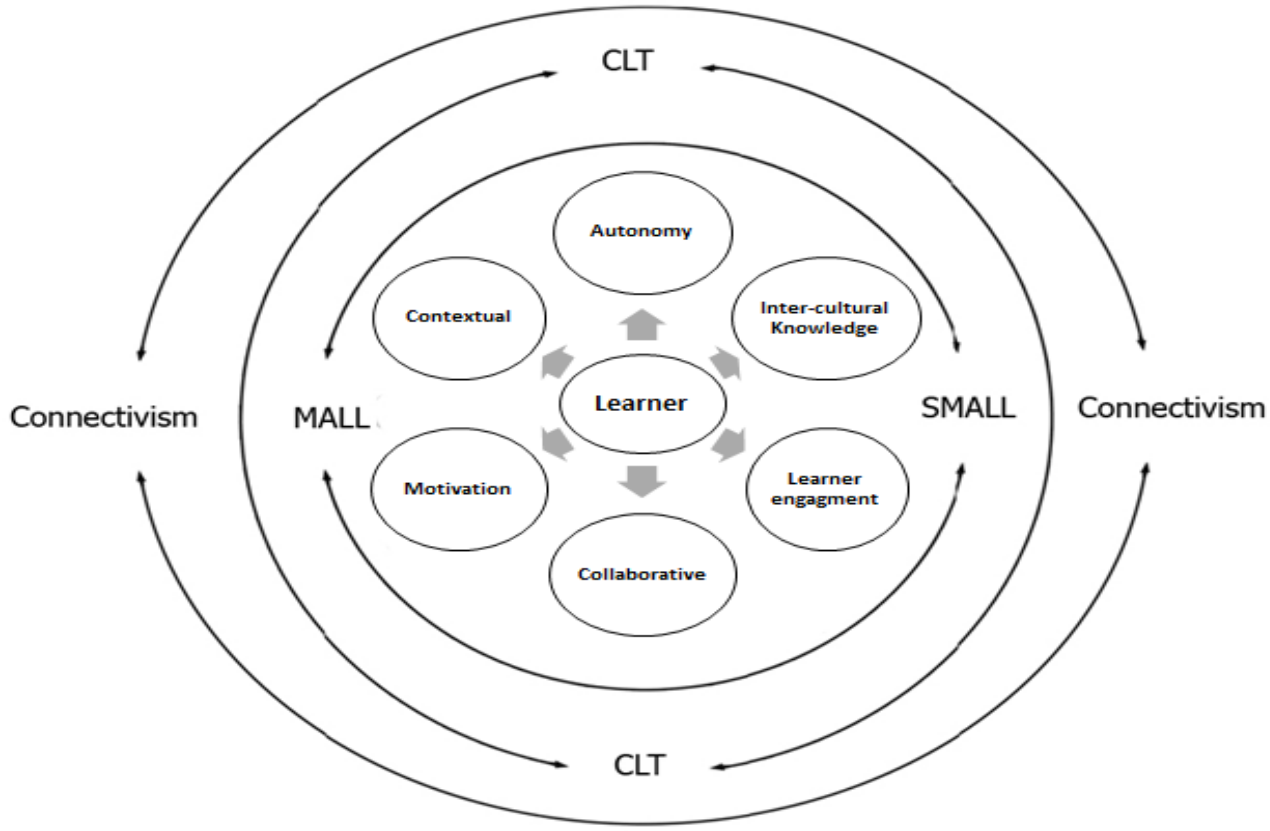


Figure 1.3 proposed model for the learning MALL connectivism environment

It is proposed that a DBR method of a programme of regular activities will be developed that will be based on what students have learnt and that will be facilitated, as proposed in connectivism theory through the interaction afforded by mobile social media applications. A design-based research (DBR) approach involves the students in the research in an iterative manner so that appropriate methods are developed that guide their education, while giving due consideration to curriculum demands. In the research design, current design principles of mobile learning (see Table 3.3) as well as principles of connectivism (a learning theory that appeared as a successor to behaviourism, cognitivism, and constructivism - see Chapter 5) are tested, redesigned, and then refined to establish the theoretical implications of mobile language learning in an EFL context. Importantly, the research design involves reflection and feedback from EFL students. DBR is a relatively new technique in educational research that attempts to bridge the gap between theory and practice. It owes much to the work of Ann Brown (1992, p.21) who states that DBR is engineering "interventions that not only work by recognisable standards, but are also based on theoretical descriptions that delineate why they work, and thus render them reliable and repeatable". Moreover, it is important that educational interventions are based on a theoretical learning precept and occur in natural, albeit virtual, settings. This is to ensure that the outcomes observed are contextually relevant and limit the risk of an experimental design that looks at the learner, the environment or the learning activity in isolation, which would lead to an incomplete understanding of the full context.

1.6.1 Learner Independence

In English Language education, certainly in recent years, there has been a cultural shift in Middle Eastern universities from a teacher-led presentation of knowledge to learner-centered approaches, placing greater emphasis on the role of the student in their studies (Al-Seghayer, 2019). Independence is a relatively new skill which has to be learned by students in further

and higher education, despite their personal perceptions of their considerable abilities. Benson (2013) notes more broadly that the definition of autonomy is subject to change in different contexts and according to individual perception. It is arguably a political and moral term, elusive insofar as assessment and evaluation of comparative methodologies of learning are concerned, and "*comfortingly bland*" (Ecclestone, 2002, p.28); in the Middle East it is imbued with cultural and faith imperatives. For example, drinking wine and eating pork are prohibited and not allowed to discuss during classes. It makes the conducting of an evaluative study into the principle of independent learning subject to influences that have a similar impact on the researcher. As a result, in this examination, the definition of an "*autonomous learner*" is one who is able to take responsibility for their own learning (Holec, 1981, p.28).

Learning a foreign language is not simply a classroom-instruction based activity but a continuing process of knowledge accumulation in which proficiency is achieved by practice and understanding, demanding considerable dedication and imagination on the part of the student. It is driven by motivation, attitude and, perhaps most significantly, the personal interests of the student, all of which impact on the desire for and utility of learning techniques, strategies and skills (Shabbir, 2009). Methodologies and activities which do not demand the immediate intervention of a teacher must therefore evolve, with the learners setting their own objectives, and applying strategies to meet goals and challenges they have set themselves (Moallem 2001).

1.6.2 Learner Autonomy, Motivation and Technology

Al-Seghayer (2014b) suggests that the continuous improvement of artificially intelligent technology has enabled adaptation and challenge to individual capability and self-improvement. Mobile devices, such as smartphones, are relatively inexpensive and portable, and their use is not constrained by internet connectivity limitations. They are now ubiquitous in all developed societies, an essential accessory to organising everyday life for the young

(Huang *et al.*, 2012). They open up the potential for informal learning through a range of activities (chat rooms, social media sites and apps, both individual and interactive) limited only by knowledge of their existence and student imagination, motivation and learning style (Huang *et al.*, 2012). 'One size' may not 'fit all', but there is something for everyone in the mobile technology market, offering the advantages of, for example, immediate feedback and monitoring of progress, arguably similar to the seemingly omnipresent games software.

The fostering of learner autonomy must start in a classroom environment, with the teacher guiding and advising on personal skills and development, as well as keeping abreast of the applications for, and operation of, technologically-assisted learning. The teacher becomes the facilitator, developing appropriate strategies based on their evaluation of student personality, ability and performance, which enhances formative and summative performance and learning support. Where learning is adapted to the needs and desires of the student, the opportunities are more likely to be embraced.

Technology plays a fundamental part in the social and recreational lives of the younger generation, and there are many advantages to it being used in education, which should not be stifled by the perhaps limited expertise of some traditional teachers. Whilst it is beyond the purpose and remit of this study to seek measurements of student motivation as a factor in the examination of the value of the language learning app, Aggarwal's (2014) comment is worthy of note: "desirable changes in a learner's behaviour are only possible when he is properly motivated. No learning is possible without motivation" (Ibid p.122). Student engagement is enhanced by encouraging learners to use their social skills to participate in language learning (Shabbir, 2009). The development of technology and adaptive software has stimulated discussions on methods of promoting learner independence (Moebert, *et al.*, 2016). Language learning has become more accessible and flexible through the use of technology anytime anywhere.

1.7 Rationale for the Study

Traditionally, EFL contexts in the Middle East, particularly in Saudi Arabia, have been characterised as institutional language learning settings in which teachers direct the learning process, and students are presumed to be passive receptors of knowledge (Al-Seghayer, 2016). Criticism is directed at this education practice, and the claim is made that it is an in-class-only activity, due to the paucity of opportunities for second language usage that a student can expect to encounter outside the classroom's boundaries (Ashraf, 2018).

For the purposes of this study, it is postulated that there are two principal reasons for researching the use of portable devices and the application of social media to EFL learning:

There is relatively little research in a Saudi Arabian context regarding the value of social media apps and platforms to education from the perspective of students. In addition, in Saudi universities, EFL teaching methods for the most part continue to be based on a didactic and traditional approach (Al Mukhallafi, 2014) despite increased technology use.

Language learning contexts in Saudi Arabia are mainly teacher-centred, while students' voices are to a significant extent marginalised and even ignored (Chen, 2007). Saudi EFL learning is generally an in-class-only learning practice, dependent on the presentation of standardised knowledge based on UK and American textbooks (Al-Seghayer, 2016). From his experience as a teacher, this researcher also knows that even with greater use of technology in the classroom, the resources are simply electronic versions of the printed material, reducing paperwork, but not exploiting the range of learning opportunities available online. Opportunities to interact with native speakers of the target language are rare, thus denying students the chance to experience communication in contextualised language learning settings (Wells and Arauz, 2006).

1.8 Primary Focus - Problem Statement

Higher language learning cannot be limited to the constraints of classroom time, institutional location, and teacher presentation. Little attention is directed to mobile digital communications by government initiatives, universities, or indeed academic study in the Saudi context and it is proposed that the use of social media platforms accessed via the smartphone will add value to the pantheon of learning tools. In the Saudi cultural context where teacher control and presentation of accepted knowledge has formed the basis of learning at all levels for decades, empirical research is lacking.

Cultural imperatives and traditional perceptions have resulted in control over what and how students learn. A faith-based emphasis on the acceptability of transferred knowledge might be challenged by online education resources and opportunities for interaction which may not be available in the actual world. This applies equally to the subject of English as a Second Language, long recognised by the Kingdom as essential to its integration into the world of global commerce but perceived as a threat to its cultural values, standards, and beliefs (Alrabai, 2018). It is asserted that culture has an intrinsic effect on the nature of EFL learning because Saudi Arabia has never suffered European colonial rule and so is unaffected by its values (Nouraldeen and Elyas, 2014).

Although the design of the study is based on teacher-guided activities and curriculum compliance, these are adapted through student feedback and suggestions, thereby changing Saudi pedagogic practices from the lecture-orientated, teacher-led presentation style to one based more on student autonomy and involvement. This alters the role of the student and creates potential obstacles to cultural and traditional teaching and learning function. It seems there is a need to evaluate the benefits of new learning and teaching methods, in what has been an essentially lecture-orientated method followed in higher education in Saudi Arabia (Cherner et al., 2014).

Students' perspectives and motivations are central to this research design because it investigates the potential of mobile social media applications for promoting learning within a teacher-supported framework. However, it is not intended to draw a direct use-result test but to examine attitudes and reactions through feedback, taking advantage of students' familiarity with the capacity and faculties of their mobile devices and social interactions therein. The focus is on the use of WhatsApp as a basis for tasks and activities for interactive use.

This study and the questions that arise from its research development strategy seeks to ascertain how a technological social medium can be utilised to aid learning. The identification of questions pertinent to the research design and programme is predicated on issues inherent in traditional methods of Saudi EFL education at university level. Presumptions arise from the experience of the researcher as an EFL teacher-lecturer in Saudi Arabia who is seeking ways to improve education outcomes for his students and their resultant success in the workplace. It is not intended to suggest social media renders the teacher 'irrelevant'. Rather, the study is an attempt to create a more cohesive combination of teacher input and student-centeredness to improve the current education process. Evidence of support for change in the formal pedagogical framework will, upon meeting the study objectives, assist in the development of educational policy.

The researcher's experience of teaching Saudi EFL students at university level has highlighted the relative lack of opportunity they have to communicate in English. The activities will, therefore, be designed to encourage knowledge sharing, exploiting images and contexts in which the target language will be using. An essential objective of the research design is to enlist the learner in exercise preparation, feedback, and activity development so as to improve their own performance (Rossetti and Meed, 2008). EFL teachers remain responsible for curriculum compliance but a question to be answered by this study is how mobile social media applications can promote motivation, autonomy and collaboration, and

whether students find its use to be valuable. It is clearly of benefit in their other walks of life given that over two-thirds of Saudi social network users are between the ages of 15 and 29 and utilise WhatsApp[1] and Instagram[2] on their phones as well as accessing the internet (Arab Social Media Report, 2018).

The aim is to gain a better understanding of students' perceptions of and attitudes towards the implementation of mobile phones in language learning. It is also important to explore the extent to which EFL students are prepared to invest in the learning-rich opportunities afforded by mobile phones and social media. Such an understanding may also elucidate potential pathways for teachers, researchers, and mobile application designers that provide instructional conditions that may engender a movement towards more collaborative mobile learning practices that are suitable for a variety of contexts.

1.8.1 Aim and Objectives of the Study

The overarching aim of this study is to investigate the role of mobile social media applications in supporting language learning and provide more opportunities for collaborative, cultural, and contextual experiences in the Saudi Arabian context.

Meeting the study aim is guided by the following specific goals and objectives, which have been reflected upon and designed for application in a teaching and learning collaboration

[1] What App is a mobile phone application that allows users to send text, image and voice messages, and to make audio and video calls; in addition, it allows users to set up a group which they can add their contacts to.
[2] Instagram is a social networking site that facilitates the sharing of photographs and videos, and allows comments to be made on content, as well as the sending of private messages.

with Saudi L2 students who are undertaking an EFL course. The emphasis of the design-based model is on the collection of student feedback and assessment of the opportunities they have to become involved in lesson planning and thus their own learning, and their evaluation of the benefits or otherwise of extra-classroom mobile learning. The objectives are therefore to:

1) identify the learning strategies utilised by the students involving the social media platform WhatsApp;
2) investigate how social media interaction between students and teacher will impact on language learning and knowledge retention through collaboration in activity planning and performance;
3) accumulate data on the attitudes and motivations of students in their use of social media through the smartphone in their extra-curricular language learning; and
4) show how lesson planning based on the interactive practices of the DBR model impact on motivation, self-learning, collaboration, and student involvement in their own education, all via DBR Connectivist mobile design.

1.8.2 Research Questions

The following questions have been developed to meet the objectives of the study:

1) What are the attitudes and experiences of Saudi university students with regard to using mobile social media applications for language learning?
2) To what extent does the use of mobile social media applications and mobile technology affordances promote English language learning, autonomy and collaboration in the context of the particular, traditional educational practices of Saudi Arabia?

3) In what way does a connectivist design-based approach serve to improve language teaching framework in Saudi Higher Education by refining and adjusting current learning principles and practices?
4) What challenges and mobile design principles are encountered in the implementation of mobile social media learning in the Saudi higher education?

1.8.3 Rationale for the Questions

Saudi Arabia is undergoing major changes in the structure of education provision, one of which entails embracing technology in classroom learning. However, there is no provision for the facilitation of independent learning and the use of mobile technology to promote education in EFL, a subject of study advanced as an essential skill in the Kingdom's economic development. The questions propose to investigate how the adoption of a policy on autonomous, extra-institutional mobile learning can assist in improving motivation and learning outcomes.

1.8.4 Overview of the Design-based Research Approach

This study adopts a relatively innovative design-based research approach (DBR) to facilitate the examination of the smartphone phenomenon and its value to EFL university education in Saudi Arabia, in order to meet the research aims and questions outlined herein. Anderson and Shattuck (2012) assert the particular significance of this approach in education methodology in bridging the gap between research and practice in the formal institutional setting. In the course of this study, this approach involves an adaptive methodology that uses an extended series of tests of the utility of mobile learning, which Zinger *et al.* (2017, p.3) describe with regard to DBR as being conducted "in naturalistic environments [with a] continuous iterative approach, where changes are made, assessed, and refined to improve design."

The methods used in what is essentially qualitative research in this study, commenced with a reflective questionnaire, followed by focus groups with male and female students, gender segregated as per Saudi Arabian cultural tradition, over the course of two iterations. Students were integrally involved in the process of design adjustment during the data collection as the course of digital learning progressed. They were requested to select resources to facilitate their language learning from WhatsApp through the two iterations of the learning design, transitioning their roles from passive receptors of knowledge to more active and inventive seekers. The DBR methodology encouraged learning task adaptation to develop the exercise of independence, autonomy and collaboration (Reeves, 2006). Conclusions could then be drawn from feedback on the student-centred, user-generated contextual learning experience. This enabled greater understanding of the effect of student interaction and of the intra- and extra-classroom integration of learning opportunities using meaningful and authentic resources.

Central to the study programme was the student perspective and their evaluation of the benefits of mobile digital media access to language learning, lesson and instructional design, supported by evidence, feedback and guidance geared towards a more student-centred pedagogical framework (see chapter three). The study contributes to the extensive academic literature on collaborative learning by examining its use more specifically in a Saudi EFL setting where the traditional teacher-led style has, until now, produced unsatisfactory outcomes.

The next section will provide some definitions of the most used terms in this thesis.

1.9 Structure of the Thesis

This thesis consists of seven chapters. The first three chapters establish the basis of the research undertaken; the four remaining chapters present the primary and empirical aspects of

the research. All chapters open with an introduction followed by a detailed explanation of its topic and end with a summary. The content of the chapters is discussed below (and see Figure 1.4).

Chapter One has introduced the incorporation of mobile social media for language learning purposes in the context of the research and has discussed the Saudi Vision 2030 and its role in the modernisation of the educational framework, and in the development of a new, diverse national economy capable of competing in a vibrant global market. This chapter has also detailed the aims and objectives of the study and has provided the research questions that will be addressed. **Chapter Two** includes a review of the research and literature on EFL education and the development of a more student-centred and contextual learning environment, facilitated by technology used in global classrooms. This chapter includes an examination of the place of mobile learning and social network collaboration. The chapter reviews studies and opinions on contemporary theoretical approaches to mobile language learning, and on the cultural issues and beliefs involved in language learning. Particular attention is paid to the gaps in the research which require examination.

Chapter Three outlines the process toward the identification of the apposite methodology and the methods of data collection used in this study. It discusses the epistemological and ontological approach of the research. The chapter explores the definition and characteristics of the flexible design-based research model and explains how it is distinct from traditional methodologies in its application, and how this makes it suited to this programme for student-collaborative mobile language learning. The methods and research design and procedure are then explained.

Chapters Four to Six constitute the presentation, analysis, and discussion of the study findings. **Chapter Four** starts with a summary of the mobile technology tools used to collect

the data, followed by an overview of participant choice and characteristics. **Chapter Five** describes the adjustments made to the learning design and provides the rationale for the incorporation of Connectivism into the Second Iteration. It then presents the findings from the Second Iteration of the learning task. **Chapter Six** discusses the key findings from the analysis and qualitative data presented in the previous two chapters; how they answer the research questions, meet the objectives and identify educational concepts. This has aided the proposition of a set of design principles for mobile language learning. The concluding chapter, **Chapter Seven,** clarifies how the key findings and overall contribution of the study may impact on policy making and suggests future research agendas and recommendations.

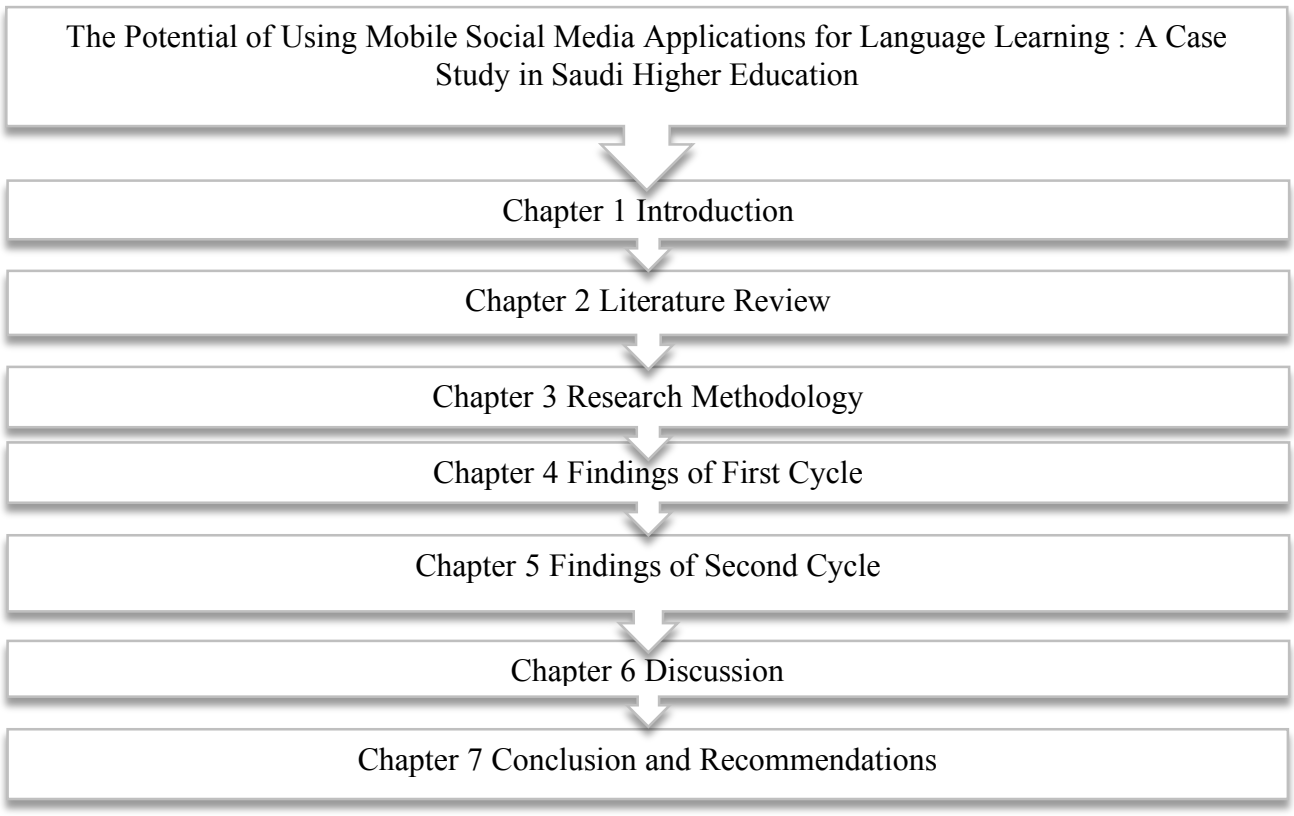


Figure 1.4 Organisation of the Thesis

2 Chapter Two: Literature Review

2.1 Introduction

Galvan and Galvan (2017) assert that the two purposes of a literature review are to (i) provide a "*comprehensive and up-to-date review of the topic*" and (ii) demonstrate a "*thorough command of the field*" of study (p. 12). In the pursuit of this part of the study, considerable use was made of the library facilities of University of Wolverhampton in the UK and the researcher's home institution, Al-Imam University in Saudi Arabia, Riyadh. The fundamental points for examination are students' autonomy, with regard to their responsibility for their own English learning, and how this can be promoted through the use of mobile technology, particularly social media applications, in a cultural framework of teacher-led education practices.

The educational potential for the role of the mobile social media applications in learning English and how this can be exploited for a more collaborative and contextual autonomic learning environment are explored and critically analysed in relation to the Saudi higher education context. This will hopefully facilitate a greater understanding of the cultural positioning of autonomous learning in a traditional framework. It was noted in Chapter One that personal, institutional and societal factors exert a strong influence on the way undergraduates learn. This is particularly significant for students in the traditional Saudi education structure.

Communication is a uniquely variable aspect of social life, conducted in a multitude of manners and now facilitated by social media platforms, which open access to a world of opportunities, information and learning. In an education context, social media platforms can provide a medium for students to interact with each other, build relationships, exchange advice and develop subject awareness, as well as enabling teachers to connect with their

learners. As noted by Nikbakht and Boshrabadi (2015, p.1635), “the most important role of social networking tools is to deepen the underlying assumption of group activity in the process of language learning”. The aim of this study is to ascertain how social media, accessed via smartphones as a lesson support tool, may support the learning of English among EFL students in Saudi Arabia. Improving teaching and learning is essential because EFL is a compulsory subject throughout the Saudi education system, - often with questionable success, across the levels at which it is taught due to insufficient opportunities to us it (Ashraf, 2018) - as well as being the international language of business.

The literature includes a range of diverse sources, particularly research studies, government policies, learning theories and ancillary professional material, in order to build a picture to meet the objectives of the study and answer the research questions (see Chapter One), through:

(i) identification of the learning strategies that students utilise to assist their learning, specifically, the use of the WhatsApp social media platform;

(ii) discussion of how social media interaction between students and teacher can impact on language learning and retention through collaboration in activity planning and performance;

(iii) an exploration of the attitudes and motivations of students concerning their use of social media through smartphones in their language learning outside of the classroom; and

(iv) an enquiry into whether lesson planning based on the interactive practices of a design-based research model can impact on motivation, self-learning, collaboration and student involvement in their own education.

These points have led to the identification and examination of literature pertinent to: (i) the learning theories which explain how university students accumulate English language

knowledge; (ii) how the shift from CALL to MALL has changed to accommodate changes in education provision; (iii) students' views on the value of mobile social media applications to promote language learning motivation, autonomy, collaboration; and (iv) perceptions of cultural obstacles to the use of mobile social media platforms as a learning method.

This chapter discusses some of the problems that impact on the EFL contexts that this research project attempts to address. In particular, current pedagogical approaches to EFL education in Saudi Arabia tend to be traditional, teacher-centred methods that cast students as passive recipients of information, note- takers and memorisers. Typical EFL classes comprise a weekly two-hour session, and use a lecture-based approach, with inadequate, or a total lack of, out-of-class learning practices or opportunities. This means that learning is disconnected, decontextualised and often fails to motivate students to think about the language they are trying to acquire beyond the weekly in-class time. This description of current EFL learning summarises the learning scenario in Saudi Arabia, where the study was conducted. EFL teacher education in Saudi Arabia, as Al-Hazmi (2013) notes, is part of the problem. He states that although EFL graduate programmes contain courses on English language skills, linguistics, applied linguistics, and translation, courses in EFL teaching methodology remain limited. In addition, students in such programmes take other courses such as educational psychology, evaluation, school administration, and curriculum studies, all in Arabic, which do not meet the needs of would-be EFL teachers in Saudi Arabia.

An analysis of the framework and context of traditional Saudi education and learning practices, now undergoing fundamental changes through government initiatives to introduce technology-based classroom learning, is also undertaken. In addition, in the exploration of the history and development of mobile technology and research, the shift of emphasis to student-centred learning is examined, aiding reflection on the preparation of the DBR programme

(explained in Chapter Three) and an understanding of connectivist learning theory explained in this chapter (see Chapter Five for more details).

2.2 Background to the Literature

The concept of computer-related learning is already recognised in the Saudi Arabian National Transformation Programme 2020 and the Saudi Vision 2030 initiative, aimed at transforming the national economy (Mitchell and Alfuraih, 2018). The initiatives envisage a new era in education provision, from primary to higher and postgraduate study, that utilises advances in digital and communications technologies. There has been a major investment in the 'electronic classroom' under the associated National Transformation Program 2020, aimed at developing subject knowledge and equipping students of all ages with vital digital skills for the modern economy (Oxford Business Group, 2018).

The paperless classroom is a primary aim of these initiatives, and the adaptation of pedagogical processes not only affects how EFL lecturers in higher education teach, but the way students learn. Digital and communications technology requires a transformation in the way knowledge is provided, accumulated and embedded in second language education (Kopinska, 2017). It is therefore integral to the research aim and objectives to examine the different learning theories in order to ascertain how the use of m-learning relates to the learning philosophies and theories upon which education practices are evaluated. This is particularly pertinent to a consideration of the cogency of Siemens' (2005) 'connectivism' as a 'new', independent theory.

Although much emphasis is placed on technology, this is largely institutionally based and fixed, using resources provided by the colleges and universities. The Ministry of Education initiatives do not, it is suggested, take sufficient account of the mobile nature and value of technology in education, even though state investment in such hardware is broadly

unnecessary because students already have smartphones for social use. It is part of the aim of this research that it will contribute to the development of a "knowledge-based society … based on a well-thought-out methodology and a clear long-term vision"; hence the choice of study design and objectives (Ministry of Education, 2018, p.1).

There is little which is novel in the government initiatives, and the Ministry of Finance notes that by 2015 a quarter of the national budget was being spent to integrate technology into the classroom, augmenting the already considerable investment over the previous three decades (Albugami and Ahmed, 2015). However, the results of this considerable investment have proved disappointing, as they lack strategies for implementation and use (Al-harbi, 2014). There is also, in relation to this study, comparatively little research on extra-classroom m-learning.

Previous studies in other contexts with a different cultural framework have sought to understand the value of digital devices from a technology-centred perspective, examining the capabilities of the device rather than its significance to the learner-user (Newhouse, 2014). Yet it is this latter point which has guided the design of this current research on mobile phone usage and social media, along with an exploration of whether students believe their involvement in the study process promotes their language learning motivation, autonomy and collaboration.

Culture is a recurring issue throughout this work and there are traditional faith obstacles that may affect the perception of students with regard to the use of mobile social media platforms as a method of autonomous and collaborative learning. Therefore, the literature review addresses appropriate academic material to explore this issue. Moreover, it is important that the views of the Al-Imam University subjects of this research are considered in the context of

insights offered by other studies. In addition, it is hoped that this will give some insight into the approach used in the planning, design and execution of this research.

Although Nalliveettil and Alenazi (2016) envisage somewhat empty university libraries as a result of the increasing use of mobile EFL learning devices, this study is not advocating the replacement of more traditional modes of learning languages; rather, it assesses the value of social media as a form of support that can be used inside and outside the classroom. This analysis will guide the process and methodology of empirical research to ascertain the effect of intercommunication between English language students in the same classes at the university beyond the formality of the classroom. It is intended to determine what benefits the learners themselves will derive from using social media applications for educational purposes. To set the scene, the next section explores traditional and current EFL education, followed by an overview of technology, and then an analysis of various learning theories in the subsequent sections.

2.3 Traditional and Current EFL Education

Traditionally, EFL classrooms in Saudi Arabia have been characterised as language learning settings in which teachers direct the learning process, and students are assumed to be passive receptors of knowledge (Al-Hazmi, 2003; 2008). This is not a finding unique to Saudi Arabia; for example, Chen (2007) determined a similar pedagogical framework in Chinese education and Crookes and Lehner (1998) recognised it as a common experience in their organisation of EFL graduate teacher training course curricula. This traditional method has been described as the teacher-centred approach, in which the teacher's role is dominant, and the students' voices are relatively underestimated and even ignored (Chen, 2007). This means students have insufficient opportunities to practise the language and this is further exacerbated by the fact that most face-to-face classroom-based EFL learning in Saudi Arabia is limited to between two and four hours a week (Al-Seghayer, 2016). This has not produced

satisfactory learning outcomes in Saudi Arabia. It does, however, point the way to improvements in education methodology and approaches.

EFL teaching has been criticised as an in-class-only practice in Saudi Arabia, with its "centralised system of curriculum development … seen as the cause for not achieving the design of an effective EFL programme" (Alnefaie, 2016, p.6). There is often a paucity of English language opportunities outside of the institutional boundaries. Teacher-centrism and in-class-only language learning have contributed to a gap between EFL learning conditions and local contexts where there are discrepancies between in-class activities and the out-of-class environment.

The above concerns are related to other EFL issues, including the lack of motivation among EFL students as a result, partly, of insufficient opportunities for integrative learning activities (Al Shlowiy, 2014). This suggests there are benefits to creating a more engaging, student-centred collaborative and communicative learning environment to encourage language development, which social media interaction can arguably fulfil, at least in part. Through more integrative learning activities, the role of the teacher would be that of a learning facilitator, one who acknowledges students' voices to develop teaching methods that cater to their needs, abilities, interests, and learning styles, offering meaningful out-of-class learning opportunities which enhance motivation. Hence the rationale behind this study, which proposes to examine this aspect of interactive learning through the provision of collaborative, interactive activities on the WhatsApp social media platform.

2.4 Technology: A Developing Aid to Teaching and Learning

Innovations in technology have broadened the horizons of the latest generation of higher education students, and social networking sites have dramatically transformed the means by which people connect with each other and distribute and receive information and learning

(Livingstone and Brake, 2010). Academic environments aim to utilise technology to effectively enhance the teaching and learning experience. Beginning with the introduction of fixed desktop computers into purpose-built rooms and eventually classrooms, the technology has developed exponentially, reducing in size to make transportable hardware and software capable of performing hundreds of tasks simultaneously and quickly.

The smartphone is now a basic, required accessory for all generations; they provide access to a world of knowledge people can easily connect to and interact with in the palm of their hands (Nalliveettil and Alenazi, 2016). The smartphone is ubiquitous and omnipresent in all aspects of a student's life - in social interaction, networking, appointment making, banking and communicating. Ling (2004) comments "the mobile phone is competing with, or perhaps supplementing, the wristwatch as a way to coordinate social interaction in a way cutting the 'middleman' out" (p.69). In the course of technological modernisation over several decades, the Saudi Kingdom grew in geo-political and global economic influence. In line with that, the government has been active in promoting the building of a state-of-the-art telecommunications network to facilitate and grow this dominance. An effect has been that Saudi Arabia is a country recording a high usage of smartphones (Seliaman and Al- Turki, 2012). Moreover, there are few innovations which have had such a profound effect on the modification of the human lifestyle as the smartphone, challenging and changing traditional means of interaction with people and knowledge, embraced by the Saudi government and its young citizenry in particular.

In the educational context, the effect of the introduction of computerised technology into the pantheon of learning resources and materials in schools and universities has been well studied and researched over the last half century. MacDonald *et al.* (1977), for example, talk of the benefits, and challenges, of its versatility, adaptability and capacity to facilitate learner emancipation; Lee (2000) points out the opportunities that technology offers in language

development through experiential activities, individualisation of learning plans, group interaction and the immediacy of feedback of gamification. Information Communication Technology (ICT) applications and tools, and changes in students' needs and interests, have been identified as factors driving the rapid rise in the use of smartphone applications such as social media, e.g. Facebook and Twitter (Staker and Horn, 2012). Teaching and learning practices come in many forms using the best of traditional and novel methods of learning, a context both inside and out of the classroom which is "dynamic, constantly changing, in part at least because of the part played by learners in helping to construct and reconstruct them" (Ellis, 2012, p.192).

Learners do not act in a uniform manner; they have different needs, style, values and preferences in the way they accumulate knowledge. In a system of mass education, individualised learning is an impossible aspiration for even the most well-informed of highly effective teachers. Nevertheless, there must be an awareness of the "composite cognitive, affective, and physiological characteristics that are relatively stable indicators of how a learner perceives, interacts with and responds to the learning environment" (Keefe and Jenkins, 2008, p.50). In determining the value of learning equipment, materials and practices, this view remains valid.

2.4.1 English Language and Vocabulary Learning

Learning English as a foreign language presents a challenge to any student, especially when it is perceived as an adjunct to an education choice which they must satisfy to proceed in their primary study of interest. Whilst it was noted in Chapter One that the Saudi higher education framework considers mastery of the English language a priority in learning, different governments of non-English speaking nations place varying degrees of emphasis on its importance. Taiwan, for example, allocates four hours of class time to vocational students each week Lu (2008), and Iran just 90 minutes of weekly classroom instruction (Derakhshan

and Kaivanpanah 2011). Even in Japan, an aspirational powerhouse of global commerce, the perception is that despite considerable social and business use and the dependence on English language based technology, there is no societal or educational consensus of its value as a formal teaching subject (Shirai, 2011). It is perhaps a generational issue, given that Sharples et al. (2005) suggest that higher education level students consider proficiency necessary, or a prerequisite to providing access to enhanced employment prospects and career progression.

National government imperatives and attitudes in Saudi Arabia differ markedly, as highlighted in the Vision 2030 initiative. This was formulated to promote the value of education and the use of digital communication advances in learning technology and the professional development of teachers in English language provision (Al-Zahrani and Rajab, 2017). As such, Al-Zahrani and Rajab (2017) assert the fundamental need for student competence in the language as follows: "English is one of the key factors in the success and continuity of the international economic relations…an essential element to build political, cultural and other relations with other countries around the world" (p.89). Alrabai (2014) argues that the major obstacle to learning is the authoritarian nature of the teaching process, which imposes the dependence of students on their teachers as "the main source of knowledge and the ultimate controller of the class rather than a democratic leader and facilitator of learning" (p.241). However, the focus and limitations of this study mean it is beyond its scope to investigate in detail the restructuring needs of the higher education framework, and the methods required for improving teachers' qualities and attitudes. It is, arguably, not incumbent on learners to make up for any gaps in the effectiveness of the way they are taught, but they have to take control of their own fate, and higher education is the time when they should be exercising some autonomy over their future.

2.4.2 The Importance of Vocabulary in Language Learning

The learning of a foreign language starts, according to Schmitt (2000, p.55), with the accumulation of vocabulary - the words necessary to facilitate communication and meaning. This is perhaps of more importance to students than command of grammar, phonetics or pronunciation, or even sentence structure, in the use of the new or unfamiliar language (Cook, 2016, p.73). Wilkins succinctly describes the contextual placement of vocabulary in language learning as follows: “the fact is that while without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (Wilkins, 1972, p.111). This explains why, in the 21st Century, EFL students will carry dictionaries rather than grammar books (Schmitt, 2010, p. 4). Anecdotally, from the researcher’s teaching experience, Schmitt appears rather optimistic in this assertion, but nevertheless, dictionary services are available on the ubiquitous smartphone. Alderson (2005) conducted a study comparing the results of vocabulary word tests, and the scores achieved in tests measuring broader language proficiency skills such as reading, writing, listening and grammar amongst the participant students. This examination utilised the DIALANG diagnostic test process developed by the Common European Framework of Reference for Languages software, developed by the EU, to facilitate the measurement of competence in other European language learning (CEELC, 2018). The results of the analysis “would appear to show is that the size of one’s vocabulary is relevant to one’s performance on any language test, in other words, that language ability is to quite a large extent a function of vocabulary size” (Alderson, 2005, p. 88).

Harmon et al. (2009) suggest that the value of vocabulary development strategies in teaching and learning have become a basic focus of EFL teaching methodologies. A popularly utilised and effective stratagem of vocabulary acquisition therefore harks back for inspiration to West's (1953) general service list in the academic environment, whereby the seemingly unwieldy lexicon is reduced to a list of 2000 frequently used words. The list appears to

remove one obstacle to the motivation to learn, namely perception of the size of the task confronted. Nation (2013) however suggests that learning English vocabulary by using a word list may have some value, but such a limited catalogue of activities does not reflect the technical differences across diverse academic disciplines, not only of the words themselves, but of the context of their use. Lists of individual words without context is an ineffective method of language learning per se, given the complexity of their use in communication, described by Nushi and Jenabzadeh (2016, p.52) as "specialized/non-specialized, academic/general, formal/informal, receptive/productive, active/passive."

Coxhead (2000) however embraces the rationale of the academic word list as a measurable aid to vocabulary learning, abstracting 570 'word families', sets of associated and contextually related words commonly used across university science, arts, commerce and law disciplines. These provide an essential foundation of vocabulary for language learning and communication for the university student, with sub-lists for advancement (Coxhead, 2000). A relatively comprehensive word list, intensively researched for value to learning and communication, provides a sound focus for memorisation and understanding, and indeed was utilised in part in the conducting of this research for test and retention assessment purposes.

What is essentially a motivational impediment to students who find English as a second language difficult to learn, or even to appreciate why they should have to do so, vocabulary acquisition can be made a manageable and measurable activity. The primacy given to the memorisation of vocabulary using a rote method of learning with a high potential for tedium, requires the teacher to make greater efforts to instil the students' interest. Baker (2012) comments "I'm amazed how subtle and complex memory is, and how beautifully it can be interfered with…. We want learning to be less effort and more fun." (p.3). The advent of mobile technology, it is suggested, also makes such knowledge and communication more easily accessible.

This study, therefore, concentrates on the improvement of the learning skills of students in their first academic year of higher education, encouraging the carrying of education materials outside of the classroom, namely smartphone software. Accessing learning materials and opportunities should be a habit instilled at the beginning of their journey in vocational education. Students embarking on a higher level of learning require a greater degree of motivation and autonomy (Han, 2014). Previous education, at the lower, preparatory levels, does not equip them with the skills and necessary development of foresight and understanding for the demands of this next, pre-career phase. Growing an understanding of their own educational needs brings greater autonomy in their pursuit, and so this study seeks to provide them with evidence that their communication devices can also enhance vocabulary learning, improve EFT proficiency and ensure a better financial future.

2.4.3 Vocabulary Knowledge and Language Proficiency

The development of a personal vocabulary word-bank which facilitates a basic standard of effectiveness in communication and understanding is suggested in the work of Wilkins (1972), Schmitt (2010) and Cook (2016). Milton (2013) asserts the strong relationship between vocabulary and the broader context of language learning, and the pursuit of effective communication, which in turn enhances vocabulary accumulation, and the process of learning continues.

Education can be informally assimilated, autonomously and voluntarily, without the need for an authoritarian teacher-presenter in the classroom (Siyanova-Chanturia and Nation, 2017). Nation (2013) suggests proficiency in the use of vocabulary, as an aid to developing broader language competence reflected in the enhancement of additional understanding, listening, reading, and writing skills, which also heightens motivation through learning satisfaction (Nation, 2013).

In the context of classroom teaching, Nation and Yamamoto (2012) suggest greater use should be made of communication resources and activities which, in turn, should enhance vocabulary accumulation and student confidence. These may be as simple as watching film clips, subtitled songs or reading stories. The focus then, is on contextualising vocabulary, which aids its understanding and use in communication. Liu (2016) calls this the conversion of "pure data into useful knowledge systematically (through) concept mapping", relating vocabulary, the 'pure data', to images for example, and series of words mnemonically structured to facilitate use in effective communication (p.128). Although particularly suited to the functions of technological learning via smartphone software, this is not a novel idea; Novak (1972) advocated practical methods of diagrammatical representation of vocabulary relationships which enhance storage, linkage and effective retrieval.

The adoption of different methods of providing opportunities for learning can be a problematic change of habitual practice for educators, especially those of an ingrained traditional bent such as the Saudi lecturer. Berne and Blachowicz (2008) suggest that teachers may not be familiar with current 'best practice' in vocabulary teaching or the recommended manner, based on the latest research, concerning placing instructional emphasis on word learning. The large proportion of research and advice appears to emanate from western European studies, which may not be accessible to or appropriate for the cultural foundations of Saudi Arabian education values and practices. Adaptation could essentially be seen as a surrender of the traditional control and demarcation of teachers and students.

Learners do not act in a uniform manner; they have different needs, style, values and preferences in the way they accumulate knowledge. In a system of mass education, individualised learning is an impossible aspiration for even the most modern teachers. Nevertheless, there must be an awareness of the "composite cognitive, affective, and physiological characteristics that are relatively stable indicators of how a learner perceives,

interacts with and responds to the learning environment" (Keefe and Jenkins, 2008, p.50). In determining the value of learning equipment, materials and practices, this view remains valid.

The next section will attempt to examine the theories on language learning and their applicability to the current research study.

2.5 How Students Learn: Review of Learning Theories and Acquisition

Understanding how students acquire and retain knowledge is central to effective teaching and the promotion of autonomous learning. The understanding of how students learn lies in the traditional theories of psychologically based theories and philosophies. They are not mutually exclusive but are based on student preferences for learning methods and processes and how they learn, which in this study, is through the use of mobile education resources (Vermunt and Donche, 2017). In order to assess the value of mobile devices to student learning, understanding of the theories developed to explain how knowledge is attained and retained must be explored. Although this study does not propose to undertake a critical assessment of the application of those philosophies to individual students, or indeed the comparative advantages of the theories per se, it is necessary to be aware of how mobile devices and apps can promote learning. Arrigo et al. (2016) point out that m-learning and the use of technology increases autonomy and thus changes learning behaviour and it is this area that this study is concerned with.

Students do not all learn in the same way, although in the mass education environment of the university classroom there is, arguably, a tendency on the part of lecturers to teach in a relatively standard manner. Fry et al. (2009, p.8) assert that "many lecturers know how they learned/learn best, but do not necessarily consider how their students learn and if the way they teach is predicated on enabling learning to happen". This is a fundamental principle of lesson planning that is considered in this research; enabling each student to be integrally

involved in feedback sessions concerning the formulation of the next activity rather than be passive receptors of knowledge.

In the context of second language learning, Peregoy and Boyle (2017) suggest the principle theories of how learners learn are behaviourist, cognitive-interactionist, and constructivist, each of which incorporates different learning practices adopted by students. Siemens (2004), however, argues these classifications do not reflect the environmental 'chaos' of learning opportunities provided by the digital age to which the world of education is now connected. His theory of 'connectivism' (see section 2.6.3 below for more detail) is predicated on the availability of diverse sources of knowledge, which increases the amount of information received by the learner, thus incurring the need for developing the ability to manage and evaluate relevance as needs change over time.

Given the anticipated impact of learning theories on the strategies of knowledge accumulation adopted by students of ESL, the traditional theories will be assessed through student feedback on their learning. This will facilitate an assessment of how Siemens' (2005) new philosophy fits with the established philosophies, either as a separate theory or simply an adaptation of constructivist practices (see section 2.6.3). How students learn will have an impact on their assessment of m-learning in the empirical investigation and is discussed through their own explanations of learning behaviour and its application to the relatively novel educational tool of the smartphone. The theory on behaviourism is discussed next.

2.5.1 Behaviourism

Skinner (1974) explains the behavioural conduct of a person as the result of inducing acceptance by neglecting to offer alternatives. Brown (2014, p.22) asserts that the "behaviourist might consider effective language behaviour to be the production of correct responses to stimuli. If a particular response is reinforced, it then becomes habitual, or

conditioned". According to behaviourist theories, behaviour is arguably learned in a Pavlovian manner, either where language accumulation results in positive test outcomes or the reward is simple praise from the teacher. Relevant to this, the primary source of information and learning in Saudi further education institutions is the teacher, the 'stimulus', and how that knowledge is presented, 'strength of the stimulus', affects how students accumulate and embed it (Wang and Shen, 2012).

In a mass, class-based Saudi education environment, teaching practice has been teacher-led and knowledge societally controlled (Alblaihed, 2016). Language learning has been a memory exercise conducted by the receptive students undertaking rote practice and textbook exercises. Low competence in the English language is the result; as Alarabi (2016, p.3) says, "teachers' reliance on incorrect pedagogical practice (is) a major problem that hinders Saudi students' competence in English and has negative consequences". The behaviourist learner passively imitates and repeats what he is told in a highly structured classroom setting, accepting the guidance and leadership of the provider-lecturer (Wright, 2006). Taking account of these conclusions, this research proposes more active learning in the accumulation of knowledge.

Such formulaic behaviourist learning is considered inhibitive in modern teaching practice, and its inadequacies are reflected in learning outcomes, with the Kingdom having the second lowest ESL achievement amongst Arab nations (Alarabi, 2016). As a singular learning theory upon which teaching is based, Brown (2014, p.36) argues: "today virtually no one would agree that Skinner's model of verbal behaviour adequately accounts for the capacity to acquire language, for language development itself, for the abstract nature of language, or for a theory of meaning." Such acceptance is, however, only a more recent development in Saudi education, and behaviourism and its associated practices of repetition and instruction continue to provide the basis for student education, despite its disadvantages.

2.5.2 Cognitive-Interactionism and Constructivism

As explained in the previous section, memory exercises may improve vocabulary learning but do little to develop 'communicative competence', a learning activity which requires active knowledge accumulation through practice and interaction either with people or in social contexts of language use (Savignon, 2018). Simple assimilation of teacher provided information is not conducive to learning or retention (Kadirire, 2009). Yu and Ben (2018, p.212) assert that "teaching is not to transfer the external knowledge from teachers to students but to guide them to construct new experiences from their original ones. Learners should no longer be passive recipients of what is being transmitted to them by the teacher. They need to be able to receive the new experience, compare it to their pre-existing knowledge, question it and eventually reconstruct that pre-existing knowledge with a higher level of thinking (Fosnot, 2005). Accordingly, the teacher's role changes from being the main source of knowledge to being a facilitator who assists the learners to construct and build their own knowledge (Lim and Lee, 2008).

The construction of language knowledge and understanding through formal learning activities, experience and reflection is described by Peng *et al*. (2009) as a three step process: (i) use of tools and personal experience; (ii) formal teaching processes and methods to increase knowledge; and (iii) 'construction' in the mind of the learner to organise and embed what they have learnt. This is an accurate description of the DRB programme explained in the Methodology chapter, which promotes interactive and collaborative communication (Sahinkarakas *et al.*, 2010). Lantolf's (2000) activity theory asserts that in constuctivist learning, students will focus on the social purposes of their activities, with an eye on a definite aim. This explains how students acquire knowledge differently when they are preparing for a grammar test to when, for example, they are reading a magazine article or an email (Yang and Wilson, 2006).

The cognitivist is more likely to seek knowledge through investigating opportunities for learning; she/he is highly motivated and open to guidance and advice rather than simple behaviourist presentation (Ertmer and Newby, 2013). Sahinkarakas *et al*. (2010) suggest that such students will be more autonomous in their learning behaviour, seeking knowledge rather than simply waiting for it. Further, Priebe *et al*. (2011) assert that cognitivists will seek new knowledge and add it to their framework of the old through interaction with others. Palalas (2018, p.21) notes that "recent exploration of the applications of mindfulness in education has demonstrated that learners can train their mind to respond to stimuli in a purposeful controlled manner, leading to more successful learning", indicating an apparent juxtaposition of cognitivist and constructionist-based practices. The use of language is intrinsic to its embedding and retention and this is integral to the cognitivist and constructionist approach of interactive learners. It is not proposed to divert from the purpose of this study by seeking precise differences in these learning philosophies.

In the manner of inquisitive and constructivist learning, this research has involved adopting a design and strategy development which it is suggested can be a learning experience in itself (Downes, 2012; Lightbown and Spada, 2013). The students are integrally involved in the search for and management and use of knowledge in curriculum-based activities. Constructivism in education has its roots in cognitive and social constructivism (Kaufman, 2004).

Communicative language teaching (CLT) is the creation by instructors of a new approach to learning which places the student as an active participant in the learning process (Toro et al, 2018). This essentially requires a redefinition of the goals of learning and a reconsideration of the division of student and teacher roles. Communicative competence in the target language means learners should be introduced to the cultural imperatives of the target language country, how to handle culturally different speech acts, and, for example, manage social

introductions, complaints, and apologies (Soler, 2007). In the CLT classroom, a wider variety of teaching materials are available in text and technologically with the flexibility to suit defined collaborative communicative learning activities. For learner engagement to take place, the learning tasks must be challenging, authentic, and multidisciplinary, collaboratively performed by the students and their peers (Wang and Kang, 2005).

Traditional Classroom	Constructivist Classroom
Curriculum begins with the parts of the whole. Emphasizes basic skills.	Curriculum emphasizes big concepts, beginning with the whole and expanding to include the parts.
Strict adherence to fixed curriculum is highly valued.	Pursuit of student questions and interests is valued.
Materials are primarily textbooks and workbooks.	Materials include primary sources of material and manipulative materials.
Learning is based on repetition.	Learning is interactive, building on what the student already knows.
Teachers disseminate information to students; students are recipients of knowledge.	Teachers have a dialogue with students, helping students construct their own knowledge.
Teacher's role is directive, rooted in authority.	Teacher's role is interactive, rooted in negotiation.
Assessment is through testing, correct answers.	Assessment includes student works, observations, and points of view, as well as tests. Process is as important as product.
Knowledge is seen as inert.	Knowledge is seen as dynamic, ever changing with our experiences.
Students work primarily alone.	Students work primarily in groups.

Figure 2.1 A comparison chart between traditional and constructive classrooms (Matsuoka and Doyle, 2004)

In order for students to construct knowledge, manage learning and attain understanding of the target language and its culture, authentic materials that reflect such aspects of the language must be used. They are not to be found in basic textbooks which fail to reflect how the L2 students can interact to achieve the communicative goals of a native culture (Kramsch, 1993). Traditional texts do not promote ‘meaningful communication’, ‘negotiation of meaning’, and ‘creative use of language’ in the expression of human relations (Kramsch, 1993, p.184).

In summary, the principles of CLT and constructivism require that for a learning environment to be effective, it needs to shift from didactic, teacher-oriented language knowledge delivery to student-centred learning practices. Learning becomes an active process that requires students to play a major part in finding and constructing their knowledge to enable effective, culturally pertinent, target-authentic language communication.

2.5.3 Connectivism

The connectivist philosophy of learning was developed by George Siemens and Stephen Downes, both of whom did substantial work in the areas of networking and connectedness in online learning and the interpretative nature of knowledge (Bell, 2009). Connectivism is a contested theory, as described below, but it its relevance to the current research study and newly emerging technologies will be highlighted in this section. According to Siemens (2005), connectivism is a learning theory for the digital age, a successor to behaviourism, cognitivism, and constructivism to compensate for their limitations. He argues that prior theoretical models, including social constructivism, only focus on the "interpersonality" and individuality of learning, rather than viewing learning as a social activity. They fail to address learning which occurs outside of the personal sphere of experience via technology and organisations and are too centred on the actual process of learning rather than value judgements in knowledge-rich environments,

In today's environment, action is often needed without personal learning; that is, we need to act by drawing information outside of our primary knowledge. The ability to synthesise and recognize connections and patterns is a valuable skill. (Siemens, 2005, p.13)

Bell (2011, p.101) argues that social constructivists greatly emphasise the importance of social interactions in influencing individual knowledge generation: "the whole is greater than the sum of the parts, and knowledge becomes a cultural artefact, associated with groups

within a specific context". This is a perspective broadly shared with connectivism. This means that learning theories may benefit from promoting the learning by (a) social and group-based processing of knowledge; (b) networked knowledge construction; and (c) the ability to use different approaches and personal skills, from digitally mediated environments and networks.

Connectivists characterise knowledge as a flow of information that passes through networks of human and non-human channel "artefacts" or actions, and posit that networks consist of connections between "nodes". The nodes may be individuals, groups, systems, resources, or communities (Bell, 2009). Connectivism then is defined as "the integration of principles explored by chaos, network, complexity and self-organisation theories [where] shifting core elements [are] not entirely under the control of the individual" (Siemens, 2005, p.24).

Learning is based on networks of information, contacts, and resources that are meant to solve problems and so requires individuals to gather, classify and prioritise information (Wright, 2010) accrued from the communication of a range of diverse opinions and views facilitated by digital technology. This includes curriculum-based guided education courses but also informal communication through email, blogs, internet searches and online communities. Essentially, what can be learned goes beyond the limitations of sources of knowledge as students develop the skills of information management. Knowledge changes almost as it is consumed, becoming outdated and requiring replacement in a continuing process of accumulation, thus impacting the individual decision-making process and choice 'through the lens of a shifting reality' (Siemens, 2005, p.26). The principles postulated by Siemens appear prima facie an obvious result of relatively untargeted sources of language knowledge and accumulation but can be harnessed to support curriculum-based course outcomes in a society with strict cultural expectations to direct successful formal, institutional learning.

Learning has an end goal, suggests Siemens (2007), namely the increased ability to do something, whilst also remaining subject to the changing inputs of context and availability of knowledge. Learning may be practical in nature, and it may increase competence in the use of a new software tool or learning how to perform a physical skill. It includes developing the capacity to function more effectively in a knowledge era, self-awareness and personal information management, an actuation, or activation, of the knowledge gained where thinking and emotions influence each other.

Landgraf (2007) outlines the individuality of contextual and interactive learning, suggesting that whilst there may be common, curricular-based academic expectations of what students should learn, each will have their own methods of committing knowledge to memory. Such 'creative thinking skills' will aid the development of individual growth in what the learner identifies as their talents and background knowledge. Experience and innate talents in diverse fields are enhanced by the gaining of knowledge in a manner suited to the student's way of managing and using learning. Thus, the accumulation of learning through prior knowledge will make it difficult for a teacher to determine what sort of knowledge or understanding students have before they meet in a classroom or online. Nevertheless, it will facilitate further accumulation and understanding as it develops.

Connectivism has been criticised as a stand-alone learning theory and is seen by some simply as complementary to the more established philosophies, particularly social constructivism (Ally, 2008). It is even considered a 'brand' in the sense of a manufactured product, a personal invention of Siemens to establish his contribution to learning theories which effectively ignores the application of pre-existing theories, notes Bell (2011). Verhagen (2006) argues it is simply a "pedagogical view", a way by which students and their teachers interact in the pursuit of knowledge rather than a foundation of learning. Kerr (2007, p.4) in turn claims that the other established learning theories sufficiently account for the impact of

technology evolvement on learning, and that connectivism "has either already been claimed by others or has been better done by others". Further, Kop and Hill (2008) conclude that connectivism is not effectively a separate learning theory; however, they do suggest it plays a significant role in generating new pedagogies for the shifting focus of learning from teacher to more student-centred learning approaches.

Whilst these criticisms are not ignored, the technology-based nature of this study and the use of mobile digital software as a specific tool of learning will assist in ascertaining if there is a need to promote a novel theory of learning into the pantheon of established doctrines. The diversity of digital sources of knowledge and their accumulation, with a need for students to develop their own information management processes, will be considered in the terms and particulars of Siemens' connectivist theory and its relationship with its more accepted learning philosophies.

Connecitivism proponents characterise it as a learning theory that implements a diverse interaction of learning and knowledge theories within a uniquely changeable educational environment, engaged with the potential of emerging technologies (Bell, 2011). Ally (2008), for example, emphasises the 'connectedness' of different sources of digitally available information and networks of technology to which students have access. This, it is suggested, has fundamentally changed how learning occurs. Traditional learning theories were developed before networked learning was widely utilised and are less significant in the digital age and so "what is needed is not a new stand-alone theory … but a model that integrates the different theories to guide the design of online learning materials" (Ally, 2008, p.18).

This is an attractive conclusion, although this author suggests it places connectivism in an area between pedagogical practice and learning philosophy. It arguably undermines the rather simplified categorisation of the way students learn. Moreover, learning strategies and theories

must adapt to changes in technological advancement which open more opportunities to learn, and the feedback sessions that form part of this research offered the chance for individuals to examine their own knowledge management processes.

Schunk (2015, p.3) acknowledges that "[cognitive] theories reflect environmental phenomena", suggesting the theories require a context in which language is actually used rather than forming the basis of a memory exercise (which, in turn forms the basis of behaviourist practice). 'Connectivism' adds to the pantheon of learning theories, and given the nature of this study, an opportunity to investigate its aptness was considered appropriate without the need to lose sight of the impact of student memorisation and retention techniques, self-motivation, inquiry and knowledge organisation. Tradition is adaptable to new ideas and philosophies. Gonzalez (2004) suggests that with rapid technological change, new sources of learning appear and must be accommodated. Information has a 'half-life' – it is temporary and must be replaced. Siemens' (2004) perception and theory relies more on the intrapersonal existence of knowledge and awareness rather than a more individual based system of learning represented by the traditional philosophies. More emphasis is placed on the effect of technology opening avenues to new information, which has considerable implications in the Saudi social and educational context of controlled learning. Although Kop and Hill (2008) suggest connectivism is a product of the shift in educational resource availability, rather than a challenge to behaviourist and cognitive-interactive theories, connectivism is highly relevant to the current research. The mobile phone may simply be an additional source of knowledge, but this has considerable implications for information management and future learning by students (Sharples, 2007).

In the connectivist model, a learning community is described as a node, which is always part of a larger network. Nodes arise out of the connection points that are found on a network. It is a network that is comprised of two or more nodes linked in order to share resources. Nodes

may be of varying size and strength, depending on the concentration of information and the number of individuals who are navigating through a particular node (Downes, 2008). Learners may transverse networks through multiple knowledge domains. The peripheries of knowledge fields are porous, allowing for the interdsciplinary connections to be made. Siemens asserts, "The ability to see connections between fields, ideas, and concepts is a core skill". (Siemens, 2008, p. 13). The connectivist metaphor is particularly timely, since the navigation of the internet and the means by which information is dispersed on the internet now can provide a reference point for Siemens' assertions.

Kerr (2007) contends that the relationship between internal and external knowledge environments was accounted for in Vygotsky's formulation of social constructivism, long before any explanation was provided by connectivism. Similarly, Kerr asserts that Papert's constructivism and Clark's embodied active cognition also provided explanations prior to connectivism. Communities of practice are another model that treats learning as anin herently social and situated engagement.

Lave and Wenger (2002) researched the way people learn in their daily live and suggested the typology of a 'community of practice,' which is based on the premises that humans are social beings, and that knowledge is developed through active engagement in valued undertakings throughout their lives. Clearly, learning does not only occur within a learning institution, however, learning is a process which can take place anywhere and anyplace. Lave and Wenger (2002) do not see learning as individual; in their view learners make sense of their surroundings in a social setting, by communicating with others. Knowledge is situated within a community in which a more knowledgeable other facilitates the move from the periphery to the centre of the community. People build on earlier experiences and knowledge.

While critics do not consider connectivism as a learning theory, advocates consider that connectivism is a new form of learning theory and is an attempt to replace rather than

comple- ment existing theories (Bell, 2009) As a minimum, connectivism can be considered to reject some aspects of some traditional learning theories (Siemens, 2004) and to be influenced by other previous theories including social constructivism, network theory and chaos theory (Couros, 2009). Connectivism is therefore considered to represent a successor to theories such as cognitivism, constructivism and behaviorism (Bell 2009). Connectivism is considered by its advocates to better meet the needs of learners in the digital age than other theories as the majority of other learning theories concentrate on the individual aspect of learning, failing to consider learning which may occur outside the individual (Alshabeb and Almaqrn, 2018). By contrast, connectivism highlights the importance of learners making connections with others, which allows the flow of information and knowledge to occur between the learner and their learning community (Kop & Hill, 2008) and additionally through both human and nonhuman channels (Bell, 2009).

Since this thesis focuses on aspects of web-enabled phone technology in combination with the use of learning strategies, the following sections will explore some of the research into the use of technology in learning. The first section begins by presenting working definitions of Computer Assisted Language Learning (CALL), its emergence and how it is used for learning. It moves on to define Mobile Assisted Language Learning (MALL) and looks at the affordances of technology / mobile phones and how they could benefit learning. Next, it reports on the findings of influential studies which investigate the effectiveness of MALL. The chapter continues by presenting a number of models demonstrating users' acceptance of MALL, before the advantages and disadvantages of MALL integration are discussed. The last subsection explores the new learning opportunities provided by smart phones and Web 2.0, and shows how social network sites and applications, particularly WhatsApp - the focus of this study - are utilised in learning by reporting the findings of some relevant studies. Finally, the chapter ends with the theoretical perspectives underpinning this study.

2.6 Development and Phases of Computer Assisted Language Learning (CALL)

Language learning and teaching styles substantially changed with the advent of the most basic of CALL programmes in the 1960s (Warschauer, 2000). Levy (1997) defines CALL as "the search for and study of applications of the computer in language teaching and learning". As long ago as 1982, Davies and Higgins asserted the word 'computer' would envision a bulky desktop device, but it should not ignore the ICT capacity for use in learning and teaching a foreign language. Its development as a tool of learning can, it is suggested, be identified in three phases: (i) behaviourist; (ii) communicative; and (iii) integrative CALL (Warschauer, 1996; Warschauer and Healey, 1998).

(i) ***Behaviourist CALL*** is based on the philosophy of learning behaviour promulgated by Skinner (1938); the conditioning of the brain to respond to environmental, reinforcement stimuli. In the context of CALL, the computer was considered to assist the role of the presentational teaching style, rewarding compliance with instructions on how to conduct standard memorisation and rote learning practices (Taylor, 1980). It was the most common computer assisted learning programme in the 1960s and early 1970s. The pedagogical material was delivered in monotonous and repetitive language drills with grammar, vocabulary and translation tests (Taylor, 1980). Warschauer (1996) noted that emphasis was placed on the repetition of the same material believed to be fundamental to learn, a task suited to the impersonal, unfeeling and never-tired computer. Students could process the input and acquire a new language at their own individual pace. It became less popular in the late 1970s, as language learning shifted from a simple process of repetitive drills and

advancements in soft and hardware, particularly the microcomputer, which promised a range of different modes of learning (Warschauer, 1996).

This, it is suggested, does not mean it has no educational value in m-learning. Students still learn though repetition and list-based exercises, and these form a part of traditional classroom and textbook lessons in Saudi Arabia. However, on reflection of the methods of data gathering, this research does not specifically include planned behaviourist exercises that may change depending on the feedback discussions. Mobile digital activities are simply conducted, perhaps as a short time-filler, with the benefit of immediate feedback which learners are shown to appreciate.

(ii) ***Communicative CALL*** focuses more on the act of communicating in the target language, and "all CALL courseware and activities should build on intrinsic motivation and should foster interactivity - both learner-computer and learner-learner" (Han, 2009, p. 41). It reflected a change in perception of a method of learning which extended beyond simple rote, as computers became more popular, affordable and incorporated greater capacities than before (Collis and Muir, 1984).

Forms of language learning and communicative use replaced the rigid grammar rule learning, and repetition of given structures of the second language were abandoned (Underwood, 1984). Students were given the opportunity to interact and to choose and control their choices in programmes that aimed to enhance language skills through, for example, games and text reconstructions (Healey and Johnson, 1995). It lost impetus at the end of the 1980s when language educators realised that the limitations of the software could not live up to the all-embracing promises of developers of the capacities of their programmes (Kenning and Kenning, 1990; Pusack and Otto, 1990; Rüschoff, 1993).

Relevant to the current research study, the capacity of digital technology has developed exponentially over the last 30 years; therefore, this author has reviewed the technological capabilities of smartphones and is aware of the world of social media with its opportunities, risks and the need for fast or source checking. The programme designed for this study has not tested the published limits of technology or the platforms it accommodates, as such is the range of their capacities that this would be a somewhat wistful aim. A more detailed description of how the technology has been utilised is presented in the next chapter.

(iii) ***Integrative CALL:*** The establishment of multimedia and the Internet led to the emergence of the last and current phase of CALL (Levy, 1997). Multimedia is a general description of types of communication-based media, such as motion videos, sound, text, or graphics displayed by a computer. These have opened up a range of various possibilities for language learning via images, interactive activities and visual challenges (Hu and Deng, 2007; Schmid, 2008).

Dina and Cironei (2013) assert that language learning and teaching is enhanced by the use of the World Wide Web, an internet of innumerable, developing and changing resources. Students can communicate with the world of learning and practice in an authentic environment in which interaction is facilitated in a manner which cannot be achieved by simple texts; this encourages involvement in learning, not just passive participation. It enables students to more readily identify their skills and needs for improvement, to learn at their own pace and in a manner that best suits their changing preferences. Their level of motivation grows as their personal choices are met by a rich variety of resources, with opportunities to connect with native speakers and share learning materials with others (Dina and Cironei, 2013).

The introduction of the computer essentially revolutionised language learning for EFL students:

> It originated on the mainframe as a tutor that delivers language drills or skill practice. With the advent of multimedia technology on the personal computer, it serves as a space in which to explore and creatively influence microworlds. And with the development of computer networks, it now serves as a medium of local and global communication and a source of authentic materials. (Kern and Warschauer, 2000, p.13).

Technology developed rapidly, and digital hardware became more sophisticated and smaller, heralding the advent of MALL, the "use of personal, portable devices that enable new ways of learning, emphasising continuity or spontaneity of access across different contexts of use" (Kukulska-Hulme and Shields, 2008, p.273). Mobile devices are considered to be compact forms of PC technology, shifting their capacity from desk to lap to hand, facilitating anytime learning and teaching for students and their instructors (Kukulska-Hulme, 2009). However, the Saudi Vision 2030 initiative has not given specific consideration to m-learning, and so this research aims to help fill that gap. Furthermore, the academic evidence presented above provides a solid basis for understanding its introduction. Recently, Mobile Assisted Language Learning (MALL) has been emerging as an approach to language learning that is supported by the use of a mobile device (Begum, 2011; Keskin and Metcalf, 2011). Therefore, the next section explores the introduction of MALL and how it is suitable for language learning.

2.7 Introduction to Mobile Assisted Language Learning (MALL)

A review of the literature on mobile learning reveals a huge variety in perceptions of what mobile learning (m-learning) means. MALL is a subset of both Mobile Learning (m-learning) and Computer-assisted language learning (CALL), in which mobile technologies, such as mobiles phones, MP3/MP4 players, PDAs, and laptop computers are used (Kadirire, 2009). Academic research has principally been directed toward assessment of the technological advancement of software, and the value that particular developing capacities and faculties

have to education; as well as factors such as security, Internet access, speed and flexibility (Merza, 2018). Technological innovations have created multi-functional tools and, in an education context, students can share information, select collaborators in their education quest, make notes and audio-video record their learning experiences (Godwin-Jones, 2018).

Traxler (2016, p.203) succinctly avers that "mobile devices affect the processes by which ideas, images, information and knowledge, and hence informal learning, are produced, stored, evaluated, valorised, distributed, delivered and consumed". This forms a basis for attraction to all generations, from business persons to aspiring students, and those who simply want to keep in touch with each other. They become adapted and personalised in their content and communicative capacities. Specifically, contextual language learning is promoted when students are allowed to "naturally space their visitation of language content across moments of free time throughout the day" (Edge *et al*., 2011, p.172). This is a vague, yet complex way of stating that learning can be adapted to the time convenience of the student. The digital device provides a prompt - something to do when there is little to otherwise fill time, perhaps in the same manner as users will play games to fill space between actions. Mobile phones, for example, can effectively connect the culture of students' home lives, experiences and other demands on their time, integrating their everyday culture into classroom learning (Kolb, 2008). They bridge the divide between the technologies that students use at home and in their education (Prabhu, 2010a). Stockwell (2013) asserts that students express a preference for completing vocabulary activities (and do so with better outcomes) on mobile platforms, rather than on fixed-placed personal computers, showing a greater tendency to complete tasks, albeit at their own convenience.

Often identified as the mobile generation, these are young students who have developed extensive social communities outside the classroom on media platforms such as Instagram and Reddit that can be harnessed for contextually-based out-of-class activities (Prabhu,

2010b). The potential and affordances of mobile technology and social networking for learning, as well as the pedagogical constraints and approaches to mobile language learning, are reviewed in the next sections (see 2.8.1 and 2.11.1) . To return to the point above, the familiarity of students with the use of digital platforms is anticipated to lead to explanations of the learning tasks being less time-consuming, and not infringing on class teaching time. It should also be noted that familiarity with investigating the capacities of their devices can only enhance their cognitive skills development.

Technology changes the way students learn, encouraging (i) a more active engagement with the learning environment, (ii) constructive and reflective perceptions of what is of value to their goal, (iii) greater motivation guided by the intentional search for (iv) authentic and meaningful knowledge through (v) cooperation and collaboration (Gough, 2016, p.47). Although Gough (2016) places this in the context of informal learning, the classification of learning methods applies to this class activity-based research. Of particular interest in Gough's (2016, p.53) study is her discussion of authentic learning, a situating of language learning in events and descriptions pertinent to the target language nation, perhaps war-time experiences, or in Saudi historical, business or other contexts. This provides scope for valued reflection on activity-setting exercises relating to curriculum requirements, but expanding the opportunity for students to actively investigate answers using a range of mobile multimedia accessible through WhatsApp's capacities. Consideration will be given to how this can be introduced into the research design.

The discussion of language learning contexts brings attention to Graves' (2008) distinction between target-language embedded and target-language removed contexts, and its implications for out-of-class learning. This overlapping relationship between in-class and out-of-class language learning makes the question of the learning context more complex and accessible. Graves' (2008, p.53) comments: "An enactment perspective focuses our attention

on the classroom as where/when the language curriculum happens. However, a classroom is not an isolated environment; it is embedded in specific, complex and overlapping cultural, social, educational and political contexts."

Based on this distinction between the target-language and embedded and removed contexts, there seems to be a misalignment between the learning context and course titles in EFL contexts, particularly in Saudi Arabia where English is not commonly used in social settings. Since classrooms use English separated from context, in Saudi Arabia, it is learned in a 'target-language removed' environment, giving credence to Graves' (2008, p.156) assertion that: "… the purposes of learning a language in target language-removed contexts are varied, but the thrust is to learn language to communicate, to improve one's economic prospects, to expand one's horizons both literally and/or figuratively to be a global citizen."

Hence, this characterisation of EFL education in Saudi Arabia highlights the need to create meaningful ties between students' experiences in the classroom and their interaction with the external environment. Mobile digital technology will be examined to ascertain if and how it can integrate contextual and cultural norms from the student's own environment to make the connection between in-class and out-of-class activities successful and reliable. It is this context-awareness and sensitivity which has been utilised in the task development in the empirical study, and its importance to the research will now be examined.

This is arguably the case with social media apps in particular, including the one which has been utilised in this study: WhatsApp. The use of social media increases the imagination of the user, develops their technological skills and competencies, and enhances opportunities for collaboration (Arrigo *et al*., 2016). Hamad (2017) suggests that students are essentially addicted to mobile applications like Facebook, WhatsApp, Twitter, and Instagram. Although the term 'addiction' has negative connotations, it becomes advantageous when teachers are

enabled to engage students by using such applications in their language teaching and learning.

2.7.1 Academic Definitional Emphasis of Mobile Learning

The MALL element of this learning practice includes handheld devices such as smartphones or tablet devices used for educational purposes (Traxler, 2005). M-learning has been defined in terms of the technology or mobility of the technology as well as by reference to the size of mobile devices (Traxler, 2009) and Traxler emphasises that m-learning as an educational process in which handheld devices are the predominantly used technology tool (2015). Sharples (2006) asserts that it must consider the environment, the experiences of the user, the uses and backgrounds and O'Malley and Stanton (2002) accentuate the personalisation, connectivity and interaction afforded by handheld devices. Mobile Learning is used in the context of collaborative learning (Pinkwart *et al*., 2003), fieldwork, and as a useful tool whilst counselling and guiding others (Vuorinen and Sampson, 2003).

In the multifarious emphases of m-learning, a pathway is sought herein to gain insight into the benefits for language learning and to understand the theories behind its use and value. With that in mind, Table 2.1 below presents an overview of various m-learning definitions to simplify the start of the investigation process. This has helped the author to determine the nature of smartphone use in the methodological preparations.

Table 2.1 Definitions of Mobile Learning

Author (year)	Definition
Quinn (2000)	E-learning through mobile computational devices: palms, Windows CE machines, even your digital cell phone
O'Malley *et al*. (2003)	Any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of learning opportunities offered by mobile technologies

Trifonova (2003)	Any form of learning (studying) and teaching that occurs through a mobile device or in a mobile environment
Georgiev *et al*. (2004)	A new stage of e-learning giving students the opportunity to learn everywhere at any time through the use of mobile and portable devices
Keegan (2005)	The provision of education and training on PDAs/palmtops/handhelds, smartphones, and mobile devices
Traxler (2005)	Any educational provision where the sole or dominant technologies are handheld or palmtop devices
Doneva *et al*. (2006)	A next stage or a new form of e-learning through the use of mobile and portable devices and wireless network and communication technologies for teaching and learning
Ally (2009)	The process of using a mobile device to access and study learning materials and to communicate with fellow students, instructors or institutions
Cook *et al*. (2010)	The 'interrelationship of hardware, structures of the mobile complex and its internalisation within cultural practices' (p. 5)
Kukulska-Hulme and Traxler (2019)	'[I]s an expanding field of research and practice, increasingly shaped by rapid technological and socio-cultural change that is at odds with the more leisurely pace of evolving pedagogy, especially the formal pedagogy within colleges and universities' (p.1)

Traxler found definitions of m-learning at the time too constricting, viewing them as "techno-centric" and too "tied to current technological instantiations", focusing on digital capacity with insufficient attention paid to the student experience in a cultural context (2007, p.4). He calls for the exploration of other definitions that focus on the learner's experience and distinguish it from other forms of education, especially e-learning. Cook *et al*. (2010, p.7) place m-learning in an environment of 'meaning' through collaborative knowledge-building which is normally conducted outside of the traditional classroom and is not concerned simply with the use of images and signs for memory activities. This collaboration stimulates independent learner input.

Nevertheless, in Traxler's work with Kukulska-Hulme (2019), the development of pedagogy and learning was placed more firmly in the context of technological innovation. Creating narrow definitions of m-learning will not incorporate all related features and learning opportunities, such as a classroom or an extra-institutional environment, but the mobility and capacity of devices give rise to a multitude of learning opportunities in diverse contexts. This serves as the basis of this study of student perceptions of value to their learning, rather than that being an evaluation of the technology. Furthermore, this fits more closely with Kukulska-Hulme and Traxler's (2019) definition and is more suited to this research, which aims to assess value-to-outcome improvement in ESL education for consideration in the Vision 2030 review in 2020. A definition of m-learning would be extraordinarily long when considering the different technological, pedagogical and learning-related factors mentioned above. It must, however, include a learning context that encompasses all environments in which the smartphone operates. Mobile phone learning is a new discipline that is gaining increased attention due to its potential to improve the learning environment by providing supplementary practices even outside the classroom, due to its widespread use and flexible features.

2.8 Characteristics of M-Learning

M-learning is a relatively new learning concept that provides opportunities for continued learning as an anytime activity. Lee (2005) and Geddes (2004, p.1) call it "the acquisition of any knowledge and skills through the use of mobile technology, anywhere and anytime". Much has changed over the last three decades regarding the capacity programmed into devices, and they may now be considered mini-computers, doing much of what fixed classroom desktops contribute to learning, accessing most if not all the same resources. The advantage is that smartphones can be used anywhere there is an Internet connection, which in the Saudi Arabian telecommunications infrastructure, is not an issue of concern. It arguably

should be that m-learning is, therefore, a simple process to define, and in the context of this research, there is little doubt in the mind of the author that it simply embraces the smartphone and the access to social media required for the empirical study.

One of the primary features of MALL is its capacity to support learner centered approaches as the device is employed to access language learning materials, consume content, interact with data sources, and with teachers and peers, and to create data or text at any time. This puts learners in control of what and when they study and alters the perception that learning only takes place in a classroom (Ove *et al*., 2012). Like other technological devices, mobile phones have many distinctive characteristics. The portable feature of mobile phone devices imparts to mobile learning an ever-present or ubiquitous characteristic, termed ‘u learning’ (ubiquitous) or ‘p learning’ (pervasive), which is a suitable vehicle for personal or group learning (Kukulska-Hulme and Shield, 2008; Ng et al. 2009; Begum, 2011). That is, the main description of ‘m-learning is concerned with being 'wireless’, according to Alexander (2004), since a mobile device can be carried without the presence of wires suggesting the use of the term ‘ubiquitous’ more accurately describes ‘m-learning’.

Like other technological devices, mobile phones have many distinctive characteristics. The portable feature of mobile phone devices imparts mobile learning as an ever-present or ubiquitous characteristic, termed ‘u learning’ (ubiquitous) or ‘p learning’ (pervasive), which is a suitable vehicle for personal or group learning (Kukulska-Hulme and Shield, 2008; Ng et al. 2009; Begum, 2011). That is, the main description of m-learning is concerned with being ‘wireless’, according to Alexander (2004), since a mobile device can be carried without the presence of wires, suggesting the use of the term ‘ubiquitous’ to more accurately describe ‘m-learning’. However, in defining mobile phone learning, emphasis on the definition suggests a paradigm shift from the technology at the core of the process to the individuals driving it (Ng et al.'s, 2009; Ronchetti, 2012). Mobile phone learning is a new discipline that is gaining

increased attention due to its potential to improve the learning environment by providing supplementary practices even outside the classroom because of its widespread use and flexible features.

The following section discusses the notion of the affordances of mobile technology and how it benefits learning.

2.8.1 Technology and Mobile Phone Affordances

The notion of affordances provides distinctive perspectives when describing and understanding the use of online technology when interacting with other elements, including learners, teachers, and the physical environment for educational purposes (Conole & Dyke, 2004; Kabanda, 2014; Schrock, 2015). However, before using the notion of affordances to hypothesise the relationship between technology and learning, we need first to define the concept of affordance. The term "affordances" was coined by the psychologist, Gibson (1979, cited in McGrenere and Ho, 2000), who used it as a major element of his ecological theory of human perception. Gibson conceptualises affordances as what the environment offers the organism, defining it as "an action possibility available in the environment to an individual, independent of the individual's ability to perceive this possibility" (McGrenere and Ho, 2000). Gibson (ibid) identifies the essential properties of an affordance, including enabling action possibilities in the environment in relation to the action capabilities of a particular organism. That is, an affordance provides support for one organism, but may not exist for another. Secondly, according to Gibson, an affordance is independent of the organism's experience, knowledge, culture, or ability to perceive it. Thirdly, it is an inherent property of an object which does not change when the needs and goals of the organism change. Finally, Gibson claims that affordances either exist or do not, and in turn, the action can be completed or not. That is, Gibson does not refer to the possibility of completing the action with difficulty (McGrenere and Ho, 2000; Kabanda, 2014; Schrock, 2015).

Applying the notion of affordances to current technology and its application is helpful in developing a better understanding of how online technologies can be used to support teaching and learning (Schrock, 2015). Conole and Dyke (2004) have constructed a theoretical basis for the use of ICT to support learning by outlining a taxonomy for ICT affordances and describing its components. In developing this taxonomy, Conole and Dyke have analysed current social theories as well as the literature on the current use of technologies, after which a list of common features was drawn up to form a taxonomy including: Accessibility, Speed of change, Diversity, Communication and Collaboration, Reflection, Multimodal and Nonlinear, Risk, Fragility and Uncertainty, Monopolization, and Surveillance. Later on, Schrock (2015) synthesised a typology of communicative affordances from the previous decade of the literature on mobile communication, showing how mobile media can enhance communication and enable a wide range of uses. Schrock's framework of mobile communicative affordances includes: Portability, Availability, Locatability, and Multimodality.

The following sub-sections describe and discuss those technology affordances from the framework of both Schrock and Conole and Dyke that are relevant to the current study.

2.8.1.1 Mobility

According to Schrock (2015), portability or mobility is defined as the "perception of physical characteristics such as size, weight, as well as those evaluated through use, such as battery life" (p.1236). Portability is a feature of mobile devices that allows them to be integrated into various social contexts, as they can be carried and transported everywhere (Treem & Leonardi, 2012; Schrock, 2015). Sharpel (2007) shows that laptops, mobile phones, and wearable technologies (that can fit on the finger, around the neck, or on the wrist) have varying degrees of portability, which allows users to learn away from their usual study environment, and in turn have better control over their learning.

Vocabulary learning research has made use of the portability/mobility affordance as it is found to support vocabulary learning in many ways (Lu, 2008; Kennedy and levey, 2006; Stockwell, 2005, 2007). Firstly, following the hypothesis that multiple exposure to a range of vocabulary knowledge helps to make better connections in the brain, vocabulary learning is interrelated and best acquired through repetition. Portability allows for multiple exposure to target vocabulary since the receiving knowledge could be anywhere and anytime, as long as there is a mobile phone signal. Secondly, the relatively small size of the mobile phone screen could be made use of as it enables the learner to divide knowledge into smaller chunks, which aligns with the cumulative nature of vocabulary knowledge. The fact that lessons delivered via mobile phone are likely to be smaller in size, could also have an effect on reducing learners' cognitive load. Thus, there is no need to study from elaborated and complex texts or to carry heavy textbooks as in traditional learning.

Moreover, portability could allow learning over spaced intervals, since vocabulary lessons can be received anywhere and anytime the mobile device is with the learner. This conforms to the spacing effect hypothesis, which in turn could boost memory function.

Having looked at the issue of portability, the following sub-section will focus on the issue of accessibility.

2.8.1.2 Accessibility

Accessibility is another technological and mobile phone affordance, which is described by Conole and Dyke (2004) as easy online access to abundant information through various different channels such as portals, websites, knowledge networks, or shared community users. Accessibility allows technology and mobile phone learners to access information quickly, which is not available in traditional learning (ibid).

Accessibility can also expose learners to numerous authentic resources that are rich sources of the target language, knowledge and examples (Alsied and Pathan, 2013; Mayer, 2003; Sharples, 2000; Conole and Dyke, 2004). This advantage obtained by the affordance of accessibility, according to Conole and Dyke (2004), is called 'diversity'. Conole and Dyke (2004) argue that since learning requires the sharing of ideas and an exchange of experiences, technologies offer effective ways in which users can learn by accessing a wide range of websites, subject experts, and exposure to experiences different from their own. However, narrating experiences raises questions about the authenticity of the reported experience, as one cannot distinguish between what is real and what is fabricated via technology.

In terms of vocabulary learning, accessibility enables vocabulary learners to broaden the depth and breadth of their vocabulary knowledge. This would relieve teachers from being the only source of the target language (Alsied and Pathan, 2013).

Consequently, technology, as Mayer (2003) and Sharples (2000) indicate, could move the learning environment from the traditional teacher-centered to the learner-centered approach, enabling learners to take a much more active role in the process by allowing them to take the initiative to work independently. They are able to collaborate with others to build a productive working relationship, subverting the traditional authoritarian role of the teacher as a transmitter of information, and placing students in a position where they can search for and construct their own knowledge (Akras and Self, 2002). Therefore, the affordance of accessibility could benefit vocabulary learners, as it would help them to take the initiative and look for facets of vocabulary knowledge from countless online resources, along with having more exposure to vocabulary in various authentic contexts.

In addition, Conole and Dyke (2004) and Sorgenfrei (2013) demonstrate that the affordance of accessibility allows for Multimodal and Non-linear modes of learning. Conole and Dyke

(2004) explain that "ICT enables learners to move beyond linear pathways of learning ……and to adopt more individualized strategies and pathways" (p.119). This could be obtained, as they demonstrate, when learners follow multiple paths/ways using web search engines and hypertext to acquire the information needed. However, they point out that non-linear modes are not efficiently utilised, as most computer based tutorial packages still follow a linear style of learning. This particularly distinguishes technology/mobile learning from traditional styles, as learners learn at their own pace and do not necessarily follow a sequential learning mode (Laurillard, 2007; Koegh, 2017). In turn, vocabulary learners can have individualised learning by making use of the affordance of accessibility, as they can decide what to study, learn at their own pace, and select which modality to use during this process.

However, this large amount of available information due to the affordance of accessibility has some drawbacks. One of these is, according to Conole and Dyke (2004), 'information overload,' which requires users to verify, evaluate, and use the information obtained. Conole and Dyke (2004) claim, "the challenge is not accessing material, but rather in knowing how to use what is available" (p.116). Furthermore, Conole and Dyke (2004) consider the speed of change a core feature of technology. That is, new technologies, they state, enable fast access which rapidly changes information and world current events. However, they add that concerns over the quality of information and sources may also emerge due to this speed of access. In addition, the speed of change may also reduce the user's ability to reflect on or criticise the material, promoting surface learning (Conole and Dyke, 2004).

Interactivity as another important mobile phone and technology affordance will be discussed in the next sub-section.

2.8.1.3 Interactivity

Communication and collaboration are considered the main ICT / mobile phone affordances, which enable learning by engaging with others (Alsied & Pathan, 2013; Mayer 2003; Sharples, 2000; Conole and Dyke, 2004). This is because new technologies open up dialogue among new online communities, from being involved in forums discussing specialised topics, to joining chatrooms. Learning through communicative discourse and acknowledging diversity aligns with essential theories and approaches to learning, including Vygotsky's view of learning (Conole and Dyke, 2004). In vocabulary learning, the communicative affordance enables learning from a meaning-focused output, since learners are encouraged to post their entries, exchange knowledge about target words, and engage in making meaning. Communicative affordance could also allow for developing learners' fluency and automaticity, since they have the potential to encounter target words in many places and see how they are used in different contexts. Most importantly, the communicative affordance permits learners' receptive knowledge to be transferred to productive knowledge. This is because it allows learners to engage in authentic dialogues in which they produce their output via testing their hypothesis, asking questions, requesting feedback, modifying their output, and then making meaning.

The next sub-section will focus on the affordance of availability.

2.8.1.4 Availability

Different from accessibility, which looks at access to learning materials, availability is a key communicative affordance of mobile phones which refers to connectivity (Schrock, 2015; Sorgenfrei et. al., 2013). Schrock (2015) demonstrates that mobile phones offer the potential to be constantly connected. Yet the feature of availability is used "in more or less strategic ways" (p.1236). That is, mobile phone users direct the affordance of availability according to their specific goals. Schrock (2015) provides an example of when individuals can turn off the

push notification of their mobile Facebook, while allowing voice calls to remain active. Schrock (2015) believes availability to be a combination of "multiplexity, direct contact, and increased frequency" (p.1237). Multiplexity, according to Haythorne and Thwaite (2005) and Schrock (2015), means that mobile phone users are available and simultaneously connected to people they intend to communicate with via multiple mobile phone media, such as texting, calls, and social media. Schrock (2015) explains directness as the capability of individuals to execute communications in a way that is as direct as making a landline phone call. Finally, increased frequency is referred to by Licoppe (2004) and Schrock (2015) as the notion that the characteristic of mobile phone communication is altered by permitting frequent short interactions rather than longer ones.

Immediacy is explored in the following sub-section.

2.8.1.5 Immediacy

Immediacy is a further affordance enabled by ICT (Conole and Dyke, 2004; Rettie, 2003). Immediacy is when users exchange information extremely rapidly via smartphone, and they are expected to respond almost immediately or after a short time frame, as recipients or other interlocutors expect them to do so. This feature strengthens online social relationships and enables learners to be aware of each other even outside the classroom, which is not the case in a traditional learning setting. The sub-section below looks at multimodality as being a significant affordance provided by mobile phones and social network sites.

2.8.1.6 Multimodality

Multimodality implies that different modalities, such as sound, image and text, are viewed as a whole to make meaning using this multiple media (Conole and Dyke, 2004; Hrastinski et. al, 2015). In other words, many people use their mobile phone devices to read and exchange messages, take photographs and videos, record sound, look at pictures, watch movies, and

listen to podcasts. Thus, multimedia could offer diverse opportunities to communicate and share experiences with other people (Hrastinski et. al, 2015; Anastopoulou, Sharples and Baber, 2011).

Relevant research on language learning indicates that mobile learning and multimodality could be useful for formal learning. Looi et al. (2009) conducted a study on how mobile technology and multimodality could support English lessons. In their study, learners were asked to make their own choices about how to complete their homework assignments. The findings demonstrate that giving students the opportunity to select from a range of different modalities on mobile devices outside the classroom was useful to students' learning. Conclusions were drawn which state that allowing students to accomplish tasks in different ways is beneficial to them as it can accommodate different learning styles. Looi et al. (2009) have not revealed or discussed any disadvantages in the use of mobile devices and multimodality. Willemse and Bozalek (2015) discussed a similar set of affordances provided by WhatsApp and Facebook. These include readability, viewability, writability, accessibility, browsability, linkability, listenability and watchability. They explain that the affordances of WhatsApp and Facebook allow students and educators to discuss issues about real life and become able to share course-related information.

The affordance of multimodality provided by mobile phones and WhatsApp could allow for improved opportunities for vocabulary learning. That is, through WhatsApp's diverse multimedia input (pictures, videos, and audio files along with printed text), learners can be presented with multiple modes of vocabulary knowledge, which can accommodate different learning styles (LooI et al., 2009, Wang and Shen, 2011). In addition, it could facilitate the acquisition and the consolidation of both concrete and abstract vocabulary items when combined with multimodal articulations. The use of multimedia in vocabulary learning is largely supported by the dual coding and cognitive load hypotheses. Chen and Wang (2008)

and Wang and Shen (2011) advocate combining text with one or more multimedia content to maximise the instructional effectiveness. They also emphasise considering the principles of cognitive load theory when designing the instructional mobile phone learning messages by blending images, spoken languages, and text, in an effective combination to enhance the learning outcomes.

2.8.2 Early Mobile Devices in EFL Classrooms

The rapid development of digital devices can arguably render research obsolete within a short period of time as technology moves on. This has been noted as a feature of a future fundamental change to web capacity. A simple, obvious example of such development is in the devices used in diverse academic investigations, perhaps basic short message service (SMS) text phones, personal digital assistants (PDAs) and iPods. Each breakthrough in digital technology is tested in an educational setting, and each study has shown an actual, if rather small, improvement in learning:

(i) Chinnery (2006), for example, argues that a primary educational function of the PDA was translation in a language learning classroom.

(ii) Myers (2000), Thornton and Houser (2003), and Chen and Chung (2008) suggest broader value in textual note-taking and recording of information in much the same manner as an exercise book.

The fast-growing mobile industry has resulted in the introduction of 'cell' phones (referred to herein as 'mobiles'), which enable users to utilise more advanced functions in addition to sending and receiving short messages, accessing and taking images, and even connecting to the Internet. The development and popularity of such devices attracted considerable research of their potential in language learning and teaching (Begum, 2011; Houser *et al.*, 2002; Kiernan and Aizawa, 2004; Wang et al., 2011). Further, in 2010, Apple introduced the iPad device which was adopted fairly quickly in schools as an educational tool for ease of use,

information research and for simple storage, because it took up less space than desktops (Hu, 2011).

The influence of mobile devices can be found in both formal and informal learning contexts (Traxler, 2007). Nah *et al.* (2008) highlight in their study in Korea the benefits of mobile access to the Internet in promoting learning and pronunciation, with listening activities aiding English communication. Tabatabaei and Goojani (2012) study the use of texting in language learning in Iran. Students may wish to use the facility for communicating with each other, and this will be addressed in feedback sessions in the current study, should it occur, but it is not a formal factor to be examined in this study. Indeed, a diverse range of devices and faculties have been researched in the context of Mobile Assisted Language Learning (MALL) which it is not logistically possible to examine or verify in this study, but it is indicative of a more imaginative approach to pedagogy and learning. The questioning of Sung *et al.* (2015) of the short duration of prior studies was a cause for reflection during this research and so a full semester was planned herein to aid assessment of the value of mobile use and social media in education support.

It is only relatively recently that mobile devices have been considered for significant use in schools and universities (Sharples, 2019). Wilson and Piraino (2015) note "students are markedly accepting of m-learning possibilities, and will thus willingly partake in activities offering potential improvements in student retention and satisfaction". There is, however "a significant amount of scepticism towards "Mobile Assisted Language Learning' emerging in academic studies" (Calabrich, 2016, p. 120).

Content and directed guidance are key to language learning, with cultural, commercial and national curriculum achievements in mind: "technology can only be as good as the pedagogy behind it" (Burston, 2011, p.14). M-learning may take the 'classroom' out of the confines of

the institution but "schools generally consider outside activities difficult to manage" (Arrigo *et al*., 2016, p.27). This requires detailed design and planning of lessons and activities, and Arrigo *et al*. suggest alternating the pedagogical process across activity sites and the classroom, using mobile and desktop faculties.

The most obvious concern of teachers in the introduction of mobile phones into a classroom is, according to Campbell (2014), their capacity to distract students by ringing or tempting learners to use social media. It may be suggested that all university teachers will have experienced this, no matter what rules are set up or what steps are taken. Cheong *et al*. (2013) also suggest that classroom tasks which involve the use of the Internet must be directed and controlled, which is more difficult with mobile devices than with desktops whose access to social media is controlled and monitored by institutional and teacher supervision. This was provided for in this study, and indeed was integral to the observational data gathering process.

Kearney *et al*. (2012) nevertheless argue that mobile learning certainly has the potential to revolutionise the learning process by allowing individuals to determine their own independent paradigms and frameworks of learning. However, there needs to be a clear institutional policy on their use and content which drives guided learning in the classroom, whilst facilitating more spontaneous general language learning in the student's own study time. The value of mobile devices depends much on the nature of the technological challenges and the embracing of its use in education through attractive activities pertinent to their learning.

Arguably, the smartphone is now the ICT device of choice for the modern student, and this will be the tool utilised in this research, although a note of caution concerning digital facilities needs to be given, which is a result of the extensive reading on devices, activities

and capacities of technology. It is often the simple, rather 'old-fashioned' means of communication which have some considerable effect on education, and this study is not proposed as a competition between, for example, texting and the complexities of gaming as education tools.

2.9 Technological Changes in Pedagogy and the Community of Practice

The capacities of digital technology change daily, with new products claiming novel facilities which enhance the life of the user, from simple texting to unlimited opportunities for access to information and interaction. The Web 2.0 development of Internet connectivity is arguably the most profound change to the capacities offered by online platforms for interaction and collaboration beyond simpler information access and management, a "transport mechanism, the ether through which interactivity happens" (DiNucci, 1999, p. 33). This advanced Internet platform opened new avenues for the use of technology in education, facilitating communication between teachers and their students, digitisation of information to ease access, enhancing lesson activity choices in a hypermedia participatory environment (Enright and O'Sullivan, 2012).

With the advent of diverse technological developments of the second generation of the World Wide Web, the way people communicate has changed dramatically. Web 1.0 was essentially a provider of information for learner consumption, the development of its successor allowing learners and their teachers, as well as a host of commercial enterprises, to "create and transform" (Traxler and Kukulska-Hulme, 2016, p.220). This has led to the integration of online educational environments (Garrison and Vaughan, 2008), and today's educators are faced with new challenges with opportunities for introducing intercultural competence (IC) in their teaching and encouraging adaptation of their methods to avail the students of these new digital technologies (Wheeler et al., 2008).

Consequently, the development of Web 2 has introduced the Virtual Learning Environment (VLE) and Community of Practice. Communities of Practice are "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger, 2009). They are not specific to education and can also be found in organisations, governmental bodies, associations, the social sector, and on the Web (Ibid.). They can vary in size (number of members), in geography (local or global), in interaction (face-to-face and/or online), and in formality (formal or informal). Cochrane and Bateman (2009) point out that using mobile phones engenders greater interest amongst educators and benefit to students if users through the creation of online activities they are involved in developing, which facilitate interaction with each other regardless of geographical location. Online, app enabled, vocabulary practice groups enhance learning by sharing and communicating with fellow students and teachers. This arguably changes the context of language learning through using the language, exchanging challenges and sharing interests. Lave and Wenger (1991) called this a 'community of practice', developed by students and teachers as a result of the use of compatible digital devices in the interactive advancement and support of learning. Wenger *et al.* (2002) developed this concept of a 'community of practice' over a decade of study into a cognitive theory of 'situational learning'. Composed of three considerations and steps, it comprises: (i) the domain, or purpose - in this context the acquisition and command of English vocabulary; (ii) a community of students who seek the mutual benefit and academic growth of each other; and (iii) practice, sharing words, advice and techniques (Wenger *et al*., 2002, p.4). The capacity of mobile apps provides a cogent relationship of learning, which involves tutor guidance and direction, with meeting the challenges of the Saudi traditional cultural context. It also fosters greater independence and learning choices amongst students (Pimmer *et al.*, 2010).

In an educational context, communities of practice can be formed through Internet social media or VLEs such as Blackboard, Moodle or Sakai. They are key factors in deep learning or 'high-order learning' and are composed of teachers and students who interact in order to generate critical thinking, construct and confirm understanding. Garrison and Anderson (2003) and Garrison and Vaughan (2008) have elaborated on a framework which depicts the three elements which constitute a Community of Practice: cognitive presence, online social presence, and teaching presence. Cognitive presence is a vital component of critical thinking and deep learning. It describes the degree of the students' ability to build and validate meaning via continuous reflection and interaction. In addition, it enables the creation of a network-based context for engagement, communication, self-directed and simply shared knowledge, broadening the learner's horizons beyond the walls of the classroom in finding their own path to learning (Glassman and Kang, 2010; McLaughlin and Lee, 2010).

In addition, mobile phones are a useful tool for learners to access discussion groups, knowledge and experience, develop their 'own space' in which to grow learning experiences without the need for a formal institutional setting (Wenger *et al.,* 2002). The community is envisaged as an informal, independent, student-led, sharing of common resources. Cochrane (2012) sees no reason why it should not be used as a formal pedagogic activity, organised and planned by the teacher. This form of organised implementation of course supports its value as an autonomous student choice and practice in the sense that what is considered of value to learning must logically be attractive to those charged with providing it.

It must also be borne in mind that autonomy is contentious in Saudi Arabia. Indeed, education is a way of culturally embedding knowledge in all nations, be it via citizenship studies in the UK and the role of the national anthem and creationist learning in US institutions. Choices of learning strategy, the methods of facilitating access to knowledge, the use of value laden texts and what must be taught are not features to which Saudi Arabia has

exclusive claim. They simply differ according to national history and culture of others. The research into the value of technology to institutional and self-learning is broadly based on the nature of the technology and the digital literacy of the users. This study, however, concentrates on the strategic, pedagogical aspects of the teaching and learning process. It is not what the technology can do, but the use to which it can be put for the benefit of users.

2.9.1 Ubiquitous Language Learning

M-learning tools offer learners original and real experiences both inside and outside the classroom (Kim, 2014). Over 95% of students at universities in Poland carry mobile devices and are familiar with their use in learning in developed countries (Baloch, 2012). Their value is enhanced by storage of educational materials, PDF files, slideshows, audio and videos to facilitate convenient, instant access to learning material (Murphy, 2011). Indeed, smartphone use and digital technology may be described as a social phenomenon pervading Saudi society, with 2018 statistics showing that 91% of the population regularly access the Internet, and over three-quarters are active social media users (Hootsuite, 2018). Although the figures do not differentiate in terms of age, it is presumed that the social media connected smartphone remains an essential life tool amongst Saudi youth (Slim and Hafedh, 2019).

The extensive use of smartphones has resulted in significant research into student perceptions of MALL in second language acquisition in countries other than Saudi Arabia (Chang and Hsu, 2011; Cheng et al., 2010). Over a decade ago, Thornton and Collins (2005) had earlier found that activities which involved texting had a positive effect on learning new vocabulary and on the correct spelling of words. These are somewhat aged studies in a rapidly changing digital environment and the capacity and faculties of mobile phones have developed significantly since these studies. Nevertheless, they remain significant indicators of the value of communication and interaction using smartphones, inside and outside of the classroom, to language acquisition. They do form a basis for a tentative presumption that the more

opportunities there are to interact with peers. That is part of the rationale of this research. Social media platforms and their current popularity have superseded the more 'traditional' forms of digital connections, such as SMS and even simple speech.

Anecdotally, portable computing devices appear to be everywhere, from laptops to i- and e-Pads to mobile phones, providing a new way of organising the tasks of life, from family contact, social life arrangements, the conduct of business and, indeed, learning. They have the capacity to provide increasing autonomy to the student in the way they learn, differing markedly from the cultural and epistemic presentation of knowledge of the traditional Saudi pedagogical framework. They are replaced by "authentic multimodal content, simultaneous interactions for everyone, and more responsive feedback and assessment systems" (Kalantis and Cope, 2015).

The concept of ubiquitous learning is described as the accumulation of knowledge undertaken in "any environment that allows any mobile learning devices to access the learning and teaching contents via wireless networks in any location at any time" (Yahya *et al*., 2010, p.119). A 21st-century evolution, it expands on previous learning paradigms which have developed from the traditional to e- and m-learning, a new approach with new methods of information and knowledge delivery via ultra-mobile devices facilitated by open access networks (Yahya et al., 2010). Stanley (2013) further asserts that the proliferation of diverse types of handheld devices also provides teachers with a range of pedagogical tools which enable a greater diversity of approaches to the informal personalisation of language teaching inside and outside the classroom.

In conjunction with the Web 2.0 network revolution, a new world of interactive communication, collaboration and learning has resulted in the proliferation of social media platforms: Facebook, YouTube and Twitter, to name a few. Social media poses challenges to

teachers to direct students' use of the new access to information so as to engage them in the creation of their own knowledge frameworks and in the development of learning styles conducive to their future success (Taylor and Parsons, 2011; Alshabeb and Almaqrn, 2018). This is what McLoughlin and Lee (2011) call 'Pedagogy 2.0', the facilitation of active student learning through participation in formulating their lesson and language activities, including the utilisation, creation and sharing of social media communities and such digital capacities as video and audio presentation. This is reflective of the social constructivist perspective of learning, as explored previously, arguably developing the connectivism associated with the new capacities for digital creation and social interaction.

Moreover, the student becomes less dependent on the simple receipt of knowledge from their teachers, which changes the pedagogical role of the teacher from provider to facilitator and guide (Sturn *et al*., 2009). Using social media can move the learning process from the limitations of classroom time and create other methods of teacher presentation and student interaction of a more formal nature through video tutorials and assessment tools (Reinders and White, 2010). The more students do for themselves, from simple browsing to more curriculum-focused and teacher-controlled activities, and the more they share, the more they will learn (Ramirez, 2010). The use of Web 2.0 interactive tools and social media platforms in knowledge exchange further increases learner motivation (Goodwin-Jones, 2005), raises their interest (Stanley, 2006), and facilitates cultural exchange and inquiry.

2.10 Student Independence and Collaboration through Mobile Technology

Holec (1981) developed a simple definition of learner autonomy as "the ability to take charge of one's own learning" (p.3). The concepts of ability and responsibility play key roles in effective independent-learning, as advanced by Littlewood (1996), who added student independence and capacity to the autonomy definitional mix. These appear rather semantic inclusions which unnecessarily complicate the fact that students are fundamentally

empowered to make choices on what and how they learn. Benson (1997) joins the definition debate with the somewhat stark assertion of autonomy as “the act of learning a language outside the framework of an educational institution and without the intervention of a teacher" (p. 19). This comment appears to prima facie dispense with the central role of the teacher in facilitating learning but this is not a factor in this study, nor is it accepted as a valid proposal when considering new ways of learning based on smartphones and social media apps Whilst Yongqing (2013) suggests that educationalists and linguists have failed to reach a consensus of what learner autonomy actually involves, it should be pointed out that EFL is a curriculum based course, which meets Ministry of Education (in Saudi Arabia) specifications, and as a point of reference for participant L2 students in this study, must be passed to progress.

Meeting academic specifications in learning does not nullify students’ autonomy; it simply requires professionally qualified and knowledgeable teachers to inform and guide the progress of their students to attainment and success by whatever means are available and culturally appropriate. In the vocabulary acquisition aspect of EFL, the mobile-smartphone app is the latest tool for learning, joining other, more traditional resources and methods. The smartphone also provides students with the capacity to learn independently and improve outcomes for the motivated student. Kukulska- Hulme (2013) argues that there are new skills languages learners must gain in a world where mobile devices are valued and essential in learning, organisation and management, such as placing vocabulary in a lexical context to aid understanding and recall. Benson (2011) adds that the smartphone enables students to play an active role in their learning process and continue the process beyond the classroom, which one would have thought an imperative for an ambitious undergraduate (Gaved *et al*., 2018). This does not undermine the primary purpose of a teacher, to provide learning, support and academic feedback with guidance for improvement. The tutor will not simply become a feature of the education background, but will focus on facilitating learning in the traditional

classroom manner, whilst empowering the students through reflection, target setting and review (Little, 2007).

The introduction of mobile technology, it is suggested, reduces dependence on classroom learning and so on the authority of the teacher-instructor, facilitating student autonomy and collaboration with peers (Benson, 2007), with a loss of constrains on the place or time of learning (Kukulska-Hulme and Shield, 2008). The communication in learning opportunities are not restricted to the use of the app but involves students and teachers in a virtual sphere of information-based networking, through text, audio and visual aid transfer, and commentary and question exchanges (Liu, 2016).

2.10.1 Mobile Language Skills Development

In an ESL classroom, Begum (2011) carried out research in Jahangirnagar University, Bangladesh using the SMS function, where teachers would send instructions for learning prepositions to students. They returned their answers by SMS, which were assessed by the teacher, and feedback was sent using the same service. Student and teacher perceptions of the process were gathered using questionnaires, interviews and classroom observation reports. The findings suggest that both teachers and students found the mobile device to have considerable potential as an instructional tool in the classroom, as well as the capacity for disruption and a tendency to cause diversions from learning; a main distraction to students from learning. Such challenges are resolvable by authoritative rule setting, such as requiring phones to be in silent mode and monitoring their use. The design of the testing procedure was of considerable interest to this author, and elements of the interaction, adapted to the use of social media rather than SMS, have influenced this research design. This has been the case through reflection on several other noted studies. Clearly, although devices, activities and participants may change, it is noted that principles are broadly adaptable. Utilising student

digital skills makes the research process in this design-based model more imaginative; examples of teaching ideas used by other researchers are considered below:

(i) Gromik's (2012) research in Japan, for example, required students to record thirty-second videos with English commentary outside of the classroom about language topics selected by their teacher every week. The results indicated that students were able to develop their vocabulary skills by choosing words and phrases pertinent to the monologue which accompanied the video clip. It was an interesting activity for the learners and enabled educators to not only recognise the value of mobile devices in language learning but appreciate the linguistic and technological difficulties which could be addressed in teaching.

(ii) Baleghizadeh and Oladrostan (2012) investigated improvements in the grammatical accuracy of EFL students using mobile phones; this involved a controlled and experimental group of a total of forty beginner participants. The participants recorded their use of the language on their mobile phones as an assignment, then presented it in the following session for peer and teacher feedback, commentary and improvement. The experience of mobile-assisted learning indicated significantly better performance than that achieved by a control group undertaking a multiple-choice grammar post-test. Unmeasurable variables such as revision, application and motivation, need to be considered but there does appear to be a relative link to the usefulness of activities facilitated by the device.

(iii) In their study on more passive learning activities which are facilitated by mobile devices in the classroom, Huang *et al*. (2012) found value in their use in memory exercises and test activities. The presentation of focused activities which do not specifically require constructivist interaction to be performed according to instructions was a feature of SMS studies conducted by Tabatabaei and Goojani (2012), Barzegar

et al. (2013) and Chen (2014). SMS is shown to be a valuable language teaching and learning methodology based on teacher-led instruction and directed compliance, but it does lack the connectivist interaction of social media investigated in this study.

The Saudi social, faith and therefore education culture is predicated on gender segregation, profoundly different from western practice, and this has considerable influence on the geo-political impact on attitudes and norms of social media use (Baker et al., 2007). In this context, difficulties are evident when designing a research programme to examine technology use in EFL learning among young university students. In Saudi Arabia, Ahmed (2017) highlighted the importance of learner attitude variable on the value of the smartphone in their language learning. In what is arguably a reflection of the dominant expectation of how education should be provided, they indicated a dependence on EFL teachers to develop effective learning strategies to present to their students. This in turn required a new personal attitude on the part of the tutor to the provision of teaching instruction. This being achieved, there was much positivity in considering the smartphone a valuable tool of EFL learning.

Cavus and Ibrahim (2009) studied the views of educators and learners on the use of smartphone devices and technologies in five academic institutions in Oman and the United Arab Emirates. Most participants had positive attitudes and enthusiasm for the use of their mobile phones in learning and teaching, the study found no significant differences in terms of the influence of variables such as gender, major and level of study. As in the Kuwaiti study of Dashti and Aldashti (2015), the influencing factors were identified as student age, mobile ownership, and nationality, most enthusiasm being shown by younger adult learners. Integration of mobile phones in a higher education context for teaching and learning languages was considered apposite and beneficial by both students and teachers for use inside and out of the classroom.

In Morocco, Omari et al. (2017) researched the views of undergraduate EFL students, again finding a high level of positivity for the use of their mobile technology in learning, but identified no evidence that such attitudes were influenced by gender, age, or level ofeducation. There is an unease, anecdotally in this author's experience amongst teachers, that the formal permission to use the smartphone may result in diversion from learning activities onto social networking by young people. Omari however found that those who engaged in such activities as checking their email accounts actually had better attitudes towards learning English. Some concerns were expressed by participants about the operating system and network used during the research, variables which might undermine ease of use. Applications must provide immediate feedback with a user-friendly design and interface of the app. Omari and his team (2017) suggest this can be taken into consideration when producing a new generation of mobile phones and software.

A major motivating factor for students encouraging the introduction of another method of learning and accessing various activities relates not so much to the principle of its use in the classroom but a personal understanding of the importance of learning English and its significance to their future economic prospects (Omari et al, 2017). Warschauer (2001, p201), for example, had determined that online learning activities "*are generally quite motivating for language learners, in part because learners feel they are gaining technical skills which will prove beneficial in the future*". This encourages positivity of attitude to the smartphone utility as an additional tool of learning. This has a powerful resonance in the Saudi Arabian historical, political and commercial context.

Al-Okaily (2015) found that where intra-classroom mobile phone use was accepted and encouraged, 62% of students considered they became more engaged and active in the lesson, with 73% using them to access information independently of teacher instruction. This is indicative of a positive answer to the research question: does the implementation of mobile

social media applications promote language learning motivation, autonomy, collaboration, and out-of-classroom instruction, even though it is not a study which emphasised the usefulness of social media

This is just a small selection of the range of activities used in the study of mobile phone digital technology, and in the course of feedback sessions conducted in the course of this research, past studies will hopefully provide inspiration to the Saudi students as their feedback develops activities. In the course of considering contextual issues, a review was taken of the use of mobile technology in Saudi EFL teaching.

2.11 Mobile Devices and Integration into the Classroom: The Changing Role of the Student

The transition from the computer as a tool to mobile phones as a medium has also had an impact on student roles. As a consequence, learners are moving from a passive stance to a more active one; instead of taking in information from a single source (the teacher), learners are working independently and collaboratively, interacting, making comparisons, and creating new meaning with their fellow students, teachers, and other individuals from around the world (Kern, 1996). The distinction between traditional teacher-centred learning and student-centred learning is that the latter focuses on the needs of students rather than on those of others involved in the learning process. By putting the student first, the focus is then more on the needs, abilities, interests and diverse way students like to learn (Douglas and Jaquith, 2009; Estes, 2004; Kember, 2009). The teacher in a student-centred classroom acts as a facilitator who is no longer the primary source for knowledge (Pedersen and Liu, 2003). According to Levy and Stockwell (2006), the move toward student-centred approaches is an attempt to gain a better understanding of students' backgrounds, roles, and perspectives.

Digitised mobile technology effectively puts the classroom computer faculty in the hands of students, providing for individual and social learning needs, task and student dependent as the activity dictates (Koukopoulos and Koukopoulos, 2017). In a MALL teaching and learning environment, focused on the student, the teacher role is altered as responsibility for learning is shifted, at least in part (Kukulska, 2019; Traxler 2018). The design and organisation of activities in the MALL process aided by software which potentially provides immediate feedback to the student enables the student to be more imaginative and reflective, directing attention to weaknesses in learning which can be immediately addressed (Londono, 2014).

Researchers have different perspectives on the introduction of mobile devices in classroom teaching. Dvorak and Buchanan (2002) suggest they improve student outcomes, a cause-effect determination which excludes the effect of more 'traditional' learning variables, such as teaching quality and student focus. It is a bold endorsement, and unmeasurable, and therefore is not an aim of this study. Thornton and Houser (2005) are more moderate, highlighting the more passive function of devices in delivering learning materials and interactive opportunities, yet on reflection, this plays little part in the purpose of this research, given that this simply sees the mobile as a kind of electronic textbook. This study design utilises interactive activities. What is not in question is their faculty of promoting virtual, collaborative learning, unconstrained by time or location, limited only by motivation. It has been noted in the definitions section that Traxler (2005, p.264) describes m-learning devices as "spontaneous, private, portable, situated, informal and perhaps soon connected, personalised and interactive". This explains the concept in student-centric terms rather than technological, which is the approach adopted in this study design. Ozdamila and Cavusb (2011, p.40) conclude it is facilitated by the "ubiquitous, portable size of mobile tools, blended, private, interactive, collaborative, and instant information". M-learning provides motivation, provides instant feedback, and creates more opportunities for authentic

interaction between learners through the use of the target language (Rogers et al., 2010; Traxler, 2009). Nevertheless, the introduction of the smartphone as an instrument of classroom learning is contentious because it removes a significant element of control from the teacher and the institution.

The introduction of technology-based learning in Saudi classrooms did not have an auspicious start. Al-Asmary (2005) conducted a study at four colleges of technology, in Riyadh, Dammam, Jeddah, and Abha, with a focus on investigating the use of the Internet by EFL teachers and ascertaining its value to English language learning. Over two hundred EFL teachers contributed to the research data collection in a mixed-methodology investigation. The results showed that the Internet was rarely used for educational purposes, despite the participants having positive attitudes toward its use. This was largely due to the lack of training and familiarity with digital technology, which meant the teachers often fell back onto the methods they were most comfortable with. This is pertinent to the background research on the investigation of the cultural obstacles to the use of mobile social media platforms as a method of autonomous and collaborative learning and how these are perceived by Saudi students.

Teacher reticence to retrain is not unique to Saudi Arabia, and this part of the review considers a series of research investigations in other countries which broadly indicate a similar lack of tutor understanding of the capacities of the educational use of mobile devices. Obstacles to m-learning need not be of strictly cultural origin, and it will be of interest to ascertain from student feedback whether these are perceived to be so ‘sourced’. Power (2018, p.203) suggests that the lack of institutional interest is a major hurdle for teachers wishing to develop lessons using the digital smartphone tool. This is followed by lack of professional experience and negative institutional perceptions (Power, 2018). It is not suggested that the Saudi classrooms suffer from a lack of equipment or financing.

Although much support has been noted for MALL-based education, not all studies have emphasised positive outcomes of integration of mobile devices into language learning, as highlighted below:

(i) Brown (2012) explored tablet PC-iPad use in English classes at a Japanese university, assessing the attitudes and perceptions of both students and teachers, investigating the familiarity of students and teachers with the iPad on a variety of learning tasks in their English learning classes. This is broadly consistent with the purpose of this research; Brown's findings, however, were based on direct observation, video recordings and a distributed survey. The qualitative study showed considerable positivity, but their effective use demanded a high level of technological aptitude beyond the trials of language learning.

(ii) Itayem (2014) adopted the Technology Acceptance Model of Davis - a theory which involves the modelling of how people perceive and use technology - in his study into the behavioural analysis of student usage of mobile devices (iPads) in language learning courses. His learner participation sample consisted of twenty-five undergraduates who completed an iPad-usage questionnaire; the results were indicative of their appreciation of the practicality and simplicity of the iPad device both in and outside the classroom, and thus it was perceived as being of benefit in their language learning. Itayem's study has facets similar to this research, although this author adopts a study design that is generally descriptive in nature, does not build upon a specific theory or model, and does not simply focus on the generic iPad as the device of examination.

(iii) Tablet PCs featured in Savas' (2014) study on EFL teacher attitudes toward their use as instructional devices in language learning courses. He distributed two questionnaires to forty trainee English teachers in his quantitative data collection,

concluding from the findings that most of his teacher-participants considered the tablets helpful educational devices in language learning. With the accumulation of teaching experience, they would be able to assess how to make the best use of their functions.

(iv) Abedalla (2015), in contrast, conducted his study on student perceptions of using mobile devices to learn Arabic as a second language in three American universities. Using a mixed-method design involving both genders, the results indicated that most participants enjoyed and benefitted from using MALL applications to enhance speaking and listening proficiency. They reacted positively to the ability to assess learning at any time.

(v) Edmodo is a technological learning platform rather than a specific digital device. Al-Kathiri (2015) conducted research into how it was used and perceived by forty-two Saudi female secondary school EFL students in advancing their learning. Divided into an experimental and a control group, the former followed a traditional teaching approach incorporating directed Edmodo activities into their learning programme, and the control group concentrated on traditional teaching methods. Although Al-Kathiri found challenges in the introduction of the Edmondo tasks into the teaching programme, the responses and results were generally positive and encouraging, showing some improvement in learning, arguably attributable, to unmeasurable variables, to the missed teaching method.

(vi) First-year business administration students and their teachers at a state university in the Western Region of Saudi Arabia were the subjects of Tayan's (2017) study into the implementation of MALL. Three language instructors were interviewed, and 191 students completed questionnaires. The results affirm the value of mobile devices to

learning and retention, with the need for increased attention given to professional training to properly utilise the features of m-learning and technical competency.

This review of the studies in Saudi Arabian secondary and higher education institutions, as well as in other national cultural contexts, has shown broad support for the use of mobile, handheld devices both inside and out of the classroom but they do indicate a need for improvement in teacher knowledge.

There have been studies conducted using different methodologies and data-gathering methods over variable periods of time to ascertain the effectiveness of the use of mobile devices, their popularity amongst teachers and/or students, and the particular modes in which they are used;

(i) Ahmad (2016), for example, employed a descriptive qualitative method focusing on vocabulary and grammar to ascertain the views of 100 online EFL learners enrolled at King Abdulaziz University in Saudi Arabia over three surveys at different stages of MALL use. Positive perceptions were indicative of the online learning being helpful for retention of English.

(ii) Jaradat (2017), at the women's Princess Noura bint Abdulrahman University in Riyadh, used questionnaires and a pre- and post-study test of thirty-six students learning French. The ease of use of the mobile phone was popular for both classroom and extra-class learning, and test results were arguably indicative of language improvement when their integration into the education process was facilitated.

Essentially, MALL is popular and shows signs of being effective when integrated into the formal institutional environment. It must, however, be matched with student input and teachers' technological understanding. Further, reflection and care must always be undertaken in making direct cause and effect links between the mobile device and improvement. Some researchers in their enthusiasm have not shared such reticence, but other

variables which cannot accurately be measured interact, particularly where personal attitudes, confidence and competence are concerned.

2.11.1 Mobile Phones in the Formal Learning and Teaching Context: Challenges

The ubiquity of mobile devices in modern society needs little research, simply observation. They are considered essential to the organisation of modern living. Nevertheless, Common Sense Media (2009) suggest that mobile phones should be banned from the classroom because they are disruptive to education. Simply being a hand-held, easily carried, always accessible source of information does not make them a more effective teaching tool than lectures, dictionaries and textbooks (Runnels and Griffiths, 2013). They lack a basic education function of noting learning and ease of access to teacher oversight and review of progress. This has been tried with compatible phone hardware.

Chartrand (2016) considered the value of '*note-taking*' devices, but found:

> "One of the main problems was that it used handwriting recognition as the main method of text input but it was highly ineffective. The character recognition problems were initially so severe that it contributed to the unpopular image of the device and even though the software substantially improved, it was not enough to keep the device alive" (Ibid p.2)

Less advanced features offer less capacity, and thus may not survive in the market as more progressive apps provide greater complexity. Being smart, good looking and up-to- date may make the phone attractive but does not necessarily make it useful. Their interactive features add to the authenticity and focus of the vocabulary learning process and student autonomy (Smeets *et al*., 2004). Maharaj (2017), however, perhaps reflecting the views of EFL students, are more wary of the enthusiasm which lies in the promotion of smartphone vocabulary learning, particularly when the software adopts a dictionary format of memorising

and explanation. Clarification remains necessary in vocabulary learning, which he argues cannot be achieved through the current limitations of the smartphone app. The teacher remains integral to the avoidance of the transfer of misunderstandings.

Teachers nevertheless became more amenable to the use of smartphone language apps where value to learning and engagement in the process was detected (Thomas and O'Bannon, 2013). The main concern, after the potential disruption and ease of attention diversion, was ensuring students all had access to the same app and were using it in the same way to facilitate the effective use of class time in learning. Wang and Higgins (2005) nearly a decade earlier had pointed out that the benefits of the mobile can only be gained if the user has access to the internet, whether in class or out, if the device and software were of sufficient quality for the work and if the students possessed appropriate technological skills.

Seliaman and Al-Turki (2017) identify a related challenge, which is one of student motivation to use the devices they consider essentially social in a learning context. They do not challenge the inherent worth of the device as a teaching and learning aid, but do have concerns about learner perceptions of its primary value and whether this includes it having a role in education.

Thomas and O'Bannon (2014) note that mobile phone devices were banned from the classroom in US schools until recently, as they were believed to be disruptive to learning and teaching. If ease of communication is considered an expression of freedom and autonomy, there is an inherent risk of students diverting attention to other, covert activities which leads to loss of engagement and opportunity to learn. Their increasing pervasiveness and potential for learning have motivated some schools and teachers to re-evaluate the ban and consider the benefits associated with allowing phones in the classroom (Traxler, 2018).

Van Praag and Sanchez (2015) examined educators' beliefs and rationales for the value attributed to the use of mobile phones in a second language classroom, concluding that they perceive the classroom as a complex, isolated context. They may have identifiable worth to individuals in their informal learning time, but in the formal setting of a classroom, they are viewed as a nuisance and distraction. Self-control, or the lack thereof, in their permissible use tends to encourage diversion into recreational activity, which is what students usually perceive phones to be for (Lui *et al.,* 2014).

Campbell (2006) identifies the simple irritations for teachers which relate to less covert misuse, the ringing and inevitable excuse of forgetting to switch it off. The issue is teacher control, and through that, the preserving of engagement in learning. The classroom does not provide the ideal context in which to use mobile phones in learning. There are too many problematic variables, from simple ringing, through cheating to diversion of attention and argumentative distractions from learning. Mobiles are seen as devices that are used to communicate socially, respond to emails and share status in social media. Ottenbreit-Leftwich *et al.* (2010) assert that teachers can only allow the use of mobiles in the classroom if they are convinced that their use considerably promotes the efficiency and effectiveness of learning, motivating students to engage and interact, and to develop critical thinking skills. It is essentially a risk-reward assessment.

There is also the financial issue to consider, and differences between students concerning what they can afford by way of mobile technology which is constantly changing and developing; this is potentially a source of some conflict (Cavus, 2011). Anecdotally, the iPhone marketing machine is adept at telling the youth of the world they must update their devices on an annual basis or miss out. Patten *et al*. (2006), however, suggest that educators need to think beyond the financial challenge and focus on teaching and learning considerations before financial, logistical or technical concerns. This is perhaps a sustainable

argument, but impracticable in terms of promoting learning needs. There is a sense of inevitability, however, to the introduction of mobile smartphone technology to classroom and individual learning.

Korucu and Alkan (2011) argue that despite the challenges of use, the expense of purchase, or indeed a plethora of unidentified or new factors that inhibit educator enthusiasm and use, they will be adopted, sooner or later. This does not help teachers make the apposite decisions on classroom use, bans or restrictions on use. Nor do Korucu and Alkan (2011) provide guidance for overcoming student self-control issues. The problems militate against classroom use, but there is unquestionable value in individual use of mobile devices for independent learning, albeit with teacher guidance, in a context of supervisory oversight to ensure accuracy. This is the arena for technological interaction. It is therefore pertinent to consider the cultural context of mobile technology as a challenge to its perceived value in the decision-making process of how its use is most appropriately affected.

In the development of the plan for this study, much reflection was undertaken on the Saudi cultural context - placing mobile technology into an historically traditional framework of teaching, even where government-sponsored change was in progress. Indeed, Wei and Kolko (2005) assert that researchers wishing to study the use of mobile phones in education need to consider the societal context, including complex interrelated issues of culture, social acceptability, politics and economics. Nevertheless, there are a number of impediments to the integration of mobile phones for learning and these are highlighted below.

2.11.2 Limitations to Mobile Learning

The previous sections outlined research arising from the employment of mobile technology in a broader context and in the middle east. Several key limitations of mobile learning have

emerged, which will be summarised here and should be considered during the course of this research.

2.11.2.1 Psychological Barriers

A report by Wang and Higgins (2006) identified several issues with the use of m- learning in the classroom. They suggest that there is a significant psychological barrier to the use of mobile phones for learning purposes, since their primary use is for communication. It takes time for personal habits to change and new attitudes to be developed towards the use of the mobile phone for learning purposes, although it could be argued that the technology has advanced significantly since 2006 and it may be that both students and teachers have actually adapted to the mobile phone as a piece of technology acceptable for language learning.

Wang and Higgins (2006) cite the example of many continuing to buy books and physical resources for use in language learning, despite the proliferation of online technologies and resources. Whilst this is true, the normalization of online materials in the classroom has accelerated since the time of this study and many more students feel comfortable incorporating e-resources into their learning process (Traxler, 2009). Furthermore, the use of such technological methods does not preclude the use of traditional resources; rather, the two approaches may be adopted concurrently to maximize efficacy. Mobile learning exists to complement other strategies and approaches to language learning. not to completely replace them (Koole, 2009).

How mobile phones are interpreted in the classroom by both teachers and learners are an important factor for this thesis, however, as mentioned above, it may be the case that students are more willing to adopt m-learning as a supplement to their classroom learning. While these barriers are relatively easy to overcome, other factors such as environmental and psychological factors as well as the financial commitment, are considered to be more difficult

to resolve (Stockwell,2007). Psychological barriers were perceived to be based on the learners' misunderstanding of what they would accomplish by using the mobile phone as a learning tool. Furthermore, Stockwell (2007) suggested that the student might not comprehend how the skills acquired were transferable to other elements of the language learning experience.

Other psychological factors might include design factors or the students' own beliefs about using the mobile phone for learning. The environmental factor described by Stockwell (2007) also embraces personal values, for instance a learners' lack of confidence or personal feelings about online chat as a means of language learning, as well as perceiving that more time and effort was needed to learn using a mobile phone. Stockwell (2008) suggested that a key intervention to determine preparedness and acceptability was to investigate the learner's specific use of the mobile phone on a daily basis, and therefore be able to devise learning activities that would be more acceptable and suitable for their stage of development as a mobile phone user. In order to address the effort issue, activities could be 'bite-sized' or consist of less demanding tasks in order to reduce the cognitive load.

2.11.2.2 Teacher, Student and Institutional Engagement and Acceptance

An important consideration in the employment of m-learning as a language learning tool, is how well the learner and teacher are likely to accept the technology, or, in other words, their preparedness. If there is a negative attitude, the underlying reasons would need to be understood, otherwise implementing the use of phones for language learning would not be appropriate and could reduce motivation to learn. This factor was investigated by Stockwell (2008), since his perception was that little was understood about attitudes or individual preferences regarding the use of mobile phones as opposed to CALL activities employing a PC or traditional learning materials and techniques.

The research by Stockwell (2008) involved providing 75 Japanese students with the option of using a mobile phone or a PC for vocabulary learning; a vocabulary tutor was accessible and identical learning activities were provided. These students had prior experience of learning by means of PC-based activities. The outcome of the study was that few chose to use mobile phones for learning and the percentage of students using them over the period of the study declined. Stockwell (2008) concludes that adapting to a new technology inevitably takes time. This needs to be taken into account in this study, in that the learner might take time to adapt and will need to be supported to make the transition. The barriers to using the mobile were cited by Stockwell, as being factors concerned with the screen, inputting using the keypad size, as well as teaching pedagogy. Furthermore, there were specific concerns regarding slow page loading for the mobile technology and that the employment of the phone as a learning tool was not an integrated part of the pedagogical approach, but rather an 'add on'. In terms of curriculum design, the inference is how to ensure that the learning activities intended through use of the mobile phone, link to the entire learning program and to the other CALL techniques employed.

However, although many teacher and learner attitudes are positive and vocabulary-based activities can be enabled, cultural, economic and institutional issues could present limitations. As stated above, in the Japanese context (Kang and Maciejewski, 2000), there is a desire for m-learning in the classroom, but such is not always the case. In today's society, the 'type' of mobile phone a person carries is almost a status symbol and therefore bringing that into a learning environment may cause distress for students with the wrong 'type' of phone (Traxler, 2009). There is also some question about the institutional position on mobile learning, as although websites and activities can be used for learning, there is also the possibility that a mobile device could become more of a distraction than a tool (ibid). Therefore, institutions need to balance this limitation.

2.11.2.3 Pedagogical Limitations

Wang and Higgins (2006) also identify issues within pedagogical approaches, asserting that it is difficult for teachers to follow up on the particular progress of individual students, largely as a result of the distributed nature of the tuition. Conversely, it has been argued that this process may be facilitated on a mobile device, as a result of the increased connectivity and ease of data storage and transfer (Naismith *et.al*, 2006). Regardless of this, it is clear that the nature of the interaction between student and teacher fundamentally changes and that this may impede the development of certain students, depending on their precise requirements and learning preferences. Furthermore, the cultural barriers to mobile learning typically arise in a situation where teachers are not adequately trained in CALL techniques, or sufficiently convinced of its usefulness as a learning method. Normalization of the technology, in addition to attitudes towards m-learning and e-learning are not uniform throughout the world. As my study will be conducted in Saudi Arabia, the cultural limitations need to consider the families' attitude towards the innovation when examining the usefulness of m-learning, as this may have a profound impact on the readiness of both students and teachers to incorporate such technology.

2.11.2.4 Security and Motivation

In addition to the pedagogical implications, issues regarding learner assessment and verification of the identity of the user may also be impeded when using m-learning, as the course providers have no guarantee that the answers are coming from the individual being tested. Once again, solutions are being developed to assist with this problem; as more and more assessment takes place remotely, new methods of authentication must be established. Wang and Higgins (2006) also cite the relatively high dropout rate of students who do not complete online courses which require remote learning (20-30%). They argue that

personalized and remote learning exerts greater demands on the student, who must be more self- motivated and diligent to persevere with the study. While this may be acknowledged, it is also clear that this precisely ties into the notion that student-centered approaches require a greater active role to be taken on the part of the student in the learning process, thereby increasing deep learning and providing many overall benefits. Similarly, it is also asserted that the environment itself may limit the capacity for the student to learn (Wang and Higgins, 2006). If the user r, then they may frequently be in situations with many distractions, thereby increasing cognitive load and reducing learning efficiency. These types of issues led directly to the technical limitations currently being experienced within m-learning.

2.11.2.5 Technical Limitations

Technical limitations have also played a part in the varying success of mobile learning. Many phones have small screens and a low resolution, making navigation and perusal of information very difficult. Many users have reported high levels of fatigue when looking at information on a small screen for large quantities of time (Wang & Higgins, 2006). Although this is improving exponentially with the development of a wide variety of smartphones with much higher capabilities, it should be noted that in countries where smartphone penetration is low, mobile technology is still relatively basic, and such considerations continue to inform mobile language learning strategies. However, the ascendency of the smartphone has transformed the mobile learning arena and ushered in a new era of potential with regard to m-learning strategies and tools (ibid).

2.11.2.6 Summary

The above sections have outlined the nature of m-learning from a historical context, although mobile technology is a fairly recent and rapidly developing area. Not only has this review touched on the benefits and drawbacks of mobile learning, it has introduced the concept of

mobile technology for the purpose of language learning and the tools that have been available to students thus far. It has also acknowledged that technology is not a universal concept and the use of m- learning is affected by culture and other demographic and economic issues.

2.12 Online Social Networking in Mobile Language Learning

Searching for information, knowledge, insight and clarification on any subject has changed dramatically with the ease of browsing websites via the Internet. Access is now more convenient with the ubiquitous mobile phone, with applications (apps) facilitating the sharing of information swiftly and easily, at any time and with minimal effort. The proprietary market in free and paid apps has burgeoned for gaming, exercising, health, and teaching and learning, to name a few (Anderson and Jiang, 2018).

Quinn (2012) comments that instant and convenient mobile access to different social media tools such as mobile blogs, microblogs, YouTube, and wikis can allow a virtuous cycle of continuous learning with Facebook, for example, facilitating collaborative multimedia-supported tools and discussion forums and contextual activities. Quinn (2012, p.83) asserts that: “Learners might be able to search for someone else taking their subject who is nearby (and has allowed such contact). Context-specific group activities such as a group field trip might also be assigned or at least available. Collaborative tasks might be assigned that are allocated to a specific location.”

It is suggested that social media may be considered a part of the context in which young people live their lives, in conjunction with their physical, educational and social environments, and as such are subject to similar issues of traditional, cultural and faith-based constraints. The relationship between the student and their learning environment potential has become ‘increasingly richer and easier’ and capable of exploitation in support of traditional

teaching methods (Traxler, 2016, p. 204). This is the purpose of the investigation of this study, and the basis of the research design.

Social media tools, such as WhatsApp, wiki, blogs, and podcasts, joined the list of online functions (Lee, 2009). Belz (2005, p.4) points to the facilitation of intercultural exchanges through "telecollaboration... the use of Internet communication tools... in order to support prolonged intercultural exchanges between groups of students in various institutional settings who might otherwise not have the opportunity to interact". Metcalf and Hamilton (2016, p.16) assert that "social media tools can connect learners through collaboration and competition, especially within the social context of group events or cohort learning". This is the aim of this research design, as will be noted in the Methodology chapter: a class's use of mobile technology and WhatsApp to carry out collaborative activities, then feedback on their experiences. Students learn 'with' the mobile technology and each other, not 'from' the devices (Clough, 2016, p.46). Although the activities and learning are teacher-controlled and curriculum-based, an essential consideration in the Saudi education framework, there is more student input into their learning requirements.

Kessler (2013) believes that social media has the ability to present language in a stimulating manner which encourages use, motivation to learn and interaction in a flexible, online environment. Learner output and reception of feedback are key elements for effective language learning, providing opportunities for weaknesses to be highlighted and knowledge to be processed and accumulated (Swain, 1997). The CALL and MALL processes discussed facilitate the accuracy and management of learning through effective and individualised feedback from other connected users, facilitating discussion, embedding and correction (Kim, 2009; Collentine and Collentine, 2015).

Social media has impacted the ways in which information can be delivered in teaching and learning; ideas, materials, and news can be shared and people can cooperate and collaborate with each other. Facebook, Twitter, Instagram, and Snapchat all rose to prominence as major faculties of communication and exchange in a short period of time, and Chu and Meulemans (2008) noted their value to education, for both formal and informal learning. Tadros (2011) asserts that whilst young people recognise the capacity for learning through the use of the media for social and gaming purposes, teachers are somewhat more reticent, perhaps due to their lack of familiarity with the new technology. Students use social media to interact with each other in their learning quest, with such 'connectivism' providing a theoretical framework for empirical study evaluation (Lamy and Zourou, 2013).

2.12.1 WhatsApp: Research Programme, Social Media and Related Studies

WhatsApp, a social media platform, has been a popular tool of academic study in other education frameworks (Çam and Can, 2019; Hashemifardnia *et al*., 2018; La Hanisi *et al*., 2018). WhatsApp allows users to send and receive diverse forms of data in a variety of mediums and has reportedly one billion users in over 180 countries (WhatsApp, 2017). It is the most widely used social media tool in Saudi Arabia, eclipsing Skype and Snapchat (Fattah, 2015; Fodah and Alajlan, 2015). In the education environment – which in the context of the omni-present social media effectively means anywhere which suits the motivated student – it is the primary method of digital communication and interaction with and between students (Figure 2.3., Global Media Insight, 2018). It has enhanced the capabilities of users to interact in a variety of ways, exchanging messages in a variety of formats on a one-to-one basis or in group conversations, sharing documents, and making voice or video calls (Jain *et al*., 2016).

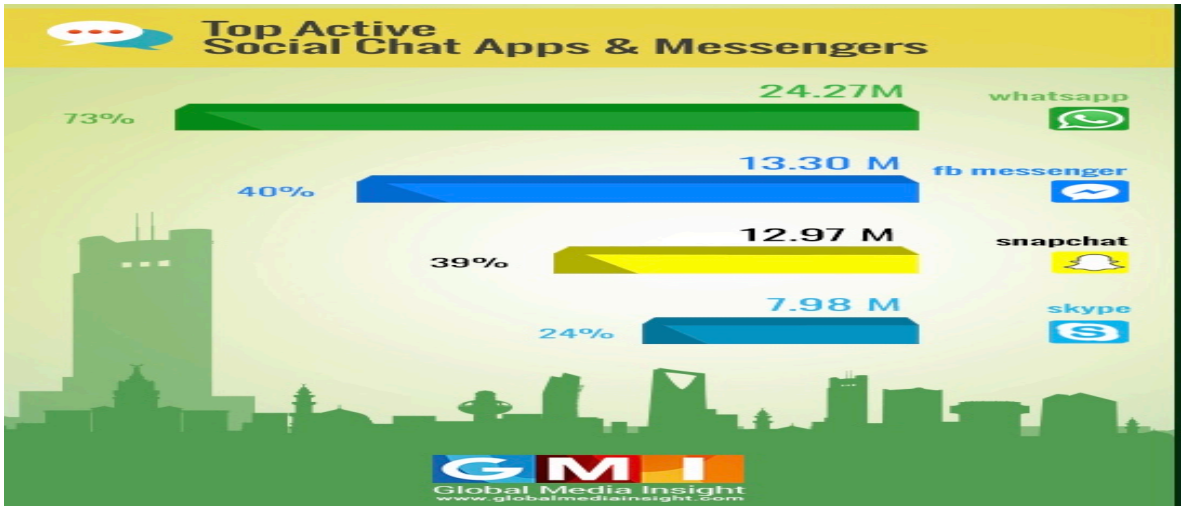


Figure 2.2 Top active chat applications & messengers

WhatsApp, evidently popular with students, is considered by teachers to be a valuable tool for transferring learning materials in MALL (Alsaleem, 2013; Plana *et al*., 2013; Taj *et al*., 2017). Castrillo *et al*. (2014) found it of use as a collaborative learning medium in learning vocabulary, pronunciation, reading, and writing. Lam (2015) considers that WhatsApp promotes the transfer, sharing and construction of language knowledge, with Jain *et al*., (2016) emphasising active communication between students and teachers. Experimental studies of the use of WhatsApp in the Saudi Arabian context assert a link between its use in a planned and directed manner by teachers and improvement in different aspects of language learning. These studies are listed below, and show which aspect of language improvement was focused on:

i. writing (Alsaleem, 2013; Fattah, 2015);
ii. reading (Hazaea and Alzubi, 2016);
iii. speaking (Almekhlafy and Alzubi, 2016; Alsaleem, 2013);
iv. knowledge of vocabulary and word choice (Alsaleem, 2013; Taj et al., 2017); and
v. idioms (Basal et al., 2016).

Again, the link is a conclusion drawn by the researchers based on the findings of the quantitative elements of their studies, and it is not a part of this study to enter into the cause-

effect debate in what is a descriptive investigation of attitudes and perceptions of mobile social media use as an integral tool of language education. The researchers suggest their results are indicative of improved performance across the various aspects of English usage which form the ESL curriculum including writing, speaking, reading, pronunciation and vocabulary.

2.12.2 WhatsApp and English Language Learning

Ahmed (2019) cites Yemen and Mahdi (2018), and their research in higher education institutions, as finding evidence of positive development of students' vocabulary range as a result of interactive activities using WhatsApp when compared to control groups. Again, one must be wary of drawing cause and effect conclusions from technology, but the results are suggestive of the broader benefits of greater collaborative opportunities facilitated by social media. This, argue Mohsen and Shafeek (2016) and Çam and Cam (2019), is a result of using WhatsApp in accessing learning outside of the English classroom environment, enhancing self-confidence in trial and error without the formality of teacher oversight. Motivation, as defined by Alnakeeb (2012, p.19) as "the set of thoughts and feelings that create a person's interest to do something", is evidenced in the research of Khan (2016), which indicates that the enjoyment associated with the use of WhatsApp and other social media facilitates a desire to learn which does not require the encouragement of parents and teachers. It ameliorates the effects of anxiety which inhibit performance and outcomes in learning new, difficult skills (Elyas and Rehman, 2018; Han and Keskin, 2016; Shamsi *et al*., 2019).

The EFL education framework in Saudi Arabia, as noted, has been studied using a technological approach to the examination of the use of digital social media software (Ahmed and Hassan, 2019; Çam and Can, 2019). The results are indicative of an improvement in speech and use where institutions use Skype, YouTube and WhatsApp facilities directed by teachers, but also audio and media resources made by students as part of their formal learning

activities (Nasr and Mustafa, 2018). In a study conducted by Alqasham (2018), which focused on the more informal use of WhatsApp, students indicated an increased motivation to share their language learning ideas in diverse formats, whether self-made or discovered online, which can only aid formal course outcomes, provided the material is accurate.

The statistics of Internet and social media use indicate the prevalence of this digital phenomenon, especially at the tertiary level of learning. Over 95% of British undergraduate students are frequent users of social networking sites (Madge *et al*., 2013). Facebook statistics reveal that around 70% of users of the site are youths (Crymble, 2013). Saudi Arabia is ranked the second country in the Arab world in terms of the number of Facebook users (Al-Abdali, 2018), with about 67% of users aged between 19 and 25 years old (Arab Social Media Report, 2018). Social media is increasingly embedded in the daily routines of Saudi youth, and usage of mobile Internet and social applications has increased substantially with each new technological development. The statistics prepared and tabulated by Global Media Insight (2018) are suggestive of the considerable influence on Saudi life and learning, indicative of the Vision 2030 adoption of a modern digital classroom that alters traditional ways of accessing knowledge and is somewhat contentious in a strict Islamic society.

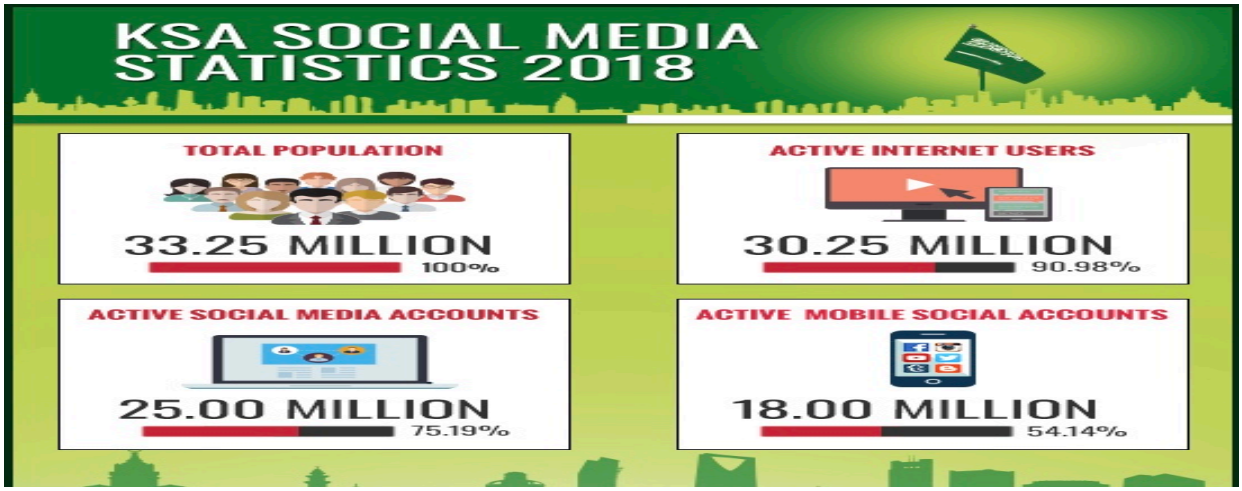


Figure 2.3 KSA social media statistics 2018

In the global provision of education, access to knowledge is difficult to control or regulate, especially when the government initiative of economic diversification demands applied language skills which cannot be achieved in the classroom exercises alone. The government must, therefore, harness the capacities offered by mobile devices and social media already embraced by students in their social lives to broaden their language education (Alsolamy, 2017). Their apparent dependence, to adopt a pejorative assessment of the ubiquity of the technically connected youth, does appear to have identifiable, even considerable, educational use in language learning.

2.12.3 The Class as a Cooperative Community: An Introduction to the Study Design

Collaborative learning in a cooperative community is a relatively new phenomenon in Saudi higher education, although a natural development of classroom learning, and is integral to the student-based feedback evaluation of social media in their education. This forms a basis for meeting the research objective of investigating how social media interaction between students and teachers will improve language learning and retention through collaboration in activity planning and performance. This section provides the basis for the promotion of EFL in Saudi Arabian education, calling on research which guides the methodology and practice of its use by the participants in this study as part of its design. It will further examine the the use to which social media can be put in the EFL classroom', but more specifically directed at collaborative learning activities. Because EFL education at the HE level cannot meet curriculum requirements in the limited class time of a few hours each week, students are expected to pursue their own learning. In this study, the setting of tasks and activities is designed to motivate and ensure continued learning outside of the classroom.

It is proposed in this study to use the widely available, free social media in the conduct of the empirical research. Social media is particularly attractive as an education resource because: (i) it is free and commonly available; and (ii) it is familiar to the students who have easy

access to its facilities and know how to use it, probably better than most of their teachers (Norman *et a*l., 2018). Quinn (2012, p.83) asserts that social networking tools, such as WhatsApp, Twitter, or YouTube, enable the building of a community of learners who share similar interests and belong to the same culture, and this is of more advantage to this study than specially developed or proprietary software for two basic reasons:

(i) This author does not have the technical capability to design a proprietary software programme, and

(ii) It is expensive, and this study is not funded by any academic or commercial organisation, and therefore cannot afford such an expense.

More simply put, the research is not technology centred, but student centred, and language instructors must ensure that their students are familiar with the mobile technology and social networking tool in question. That is not anticipated to be a problem with Saudi students. In short, mobile social media has the potential to improve language learning by providing students with effective opportunities to practice the target language and improve their linguistic skills. It is particularly of use where it incorporates the cultural norms from students' own contexts to increase attraction and motivation. Social media incorporated into the teaching and learning process has the added effect of enhancing technological competencies and collaboration skills which are in high demand in the workplace (Arrigo *et al*. 2016). In terms of accumulating and managing knowledge connectivist and social constructivist principles, as discussed above, are to be adopted in the preparation of the study, but the emphasis is on the learner's evaluation and input into the mobile phone use in their education.

The above examination of the academic literature indicates there is much to be taken account of in the reflective design of a study. Separately and anecdotally, there appears to be much which can be achieved through the use of mobile devices in language support, from the

particular devices employed, the activities used, the nature of participants' preferred method of learning and the duration of time spent on devices engaged in activities, to name but a few. It does, however, cause difficulties in developing a theoretical framework for the introduction of a new pedagogical instrument. This, it is suggested, is reflected in the discussion above on Siemens' (2005, 2005) connectivism theory of learning and its place in the pantheon of learning philosophy. Consideration, therefore, has to be given to this issue in placing the mobile device and principles of learning in the framework of language education.

2.13 Culture and Learning in Saudi Arabia in the Face of Change

Communication and business interactions cross national, cultural and linguistic boundaries, and this is reflected in the Vision 2030 initiative to increase the diversity of the Saudi economy both domestically and internationally (Alkarni, 2018). The influence of cultural imperatives on autonomous language has been noted above, but culture is a somewhat amorphous concept to define and identify (Williams, 1983). In a broad ethnographic sense, culture is described by Tyler (1857) as a complex collection of knowledge, belief, art, morals, law, customs, and any other capabilities and habits acquired by man as a member of society (Holliday *et al*., 2010).

In his book *Language and culture*, Kramsch (1998, p.10) defines the concept of language-based culture as "membership in a discourse community that shares a common social space and history, and common imaginings". Levy (2007, p.108, citing Hymes, 1974) considers such a group-based learning environment as a "speech community: a group sharing knowledge of rules for the conduct and interpretation of speech". However, Levy (2007) argues that learning with technology makes it harder to develop a precise definition of the concept of language-based culture since there are different technology-based pedagogies and different technological tools being used. Thus, he asserts "a robust, but flexible, pedagogical framework" is required to define the concept of culture, adding:

such a framework also needs to be practical, not oversimplified so as to underplay the importance of key facets of the culture concept, nor so complicated that it cannot be readily translated into effective strategies and techniques in the classroom (Levy, 2007, p.121).

This brings acknowledgement of cultural disparity no closer to finding a solution to the inter-relational difficulties of using digital technology to balance in-class and out-of-class activity-based learning, outside of the broader cultural disparity between KSA and the UK. It can be argued that the incorporation of the cultural norms of the domestic national framework and language into EFL learning is beneficial because it opens minds to new ideas and grammar disciplines, but a "negative attitude of Arab learners towards the English language limits their chances to interact in English and to achieve communicative competence" (Shah et al., 2013, p.105). The EFL context is challenged by factors such as cultural sensitivities, the influence of policy, and a lack of cultural knowledge and awareness among both instructors and students (Al-Asmari, 2012). Furthermore, a strong political aversion to teaching Western cultures or values in some EFL contexts, such as Saudi Arabia (Al-Asmari, 2012), play a role in resistance and performance. Consequently, it is more politically sensitive to incorporate local cultural norms and aspects of local daily life into out-of-class language learning activities.

Kramsch (1993, p.43) is bluntly concise on the relationship between communication and culture: "native speakers of a language speak not only with their own individual voices but through them they speak also the established knowledge of their native community and society". This applies regardless of the 'replacement' of the native tongue (Saville-Troike, 1992). In order to become proficient in a language, the knowledge of linguistic features of grammar, vocabulary and syntax must be combined with 'cultural competence', an understanding of the social context in which it is spoken. Reflection on the linguistic effect on culture is of considerable interest to the author, but the author sees that, whether English

will replace Arabic, or suddenly change Arabs to English-speaking people, is not an issue here.

Bennett *et al*. (2003) divide culture into the 'formal', including institutions, history, literature, arts, and sciences, and the practical, informal aspects of daily living, such as family interaction, homes and other patterns of behaviour. These categories are arguably more descriptive than definitive, but provide a more accessible way for young people to understand how target language speakers live. One should not forget the understanding of the cultural acceptance or disapproval of behaviour in communication using non-verbal gestures, postures and concepts of time (Lawrence, 2017).

In order to neutralise ethno-nationalist implications of the classicism of Tyler's definition, at least in the realm of communication, Risager (2007) uses the term 'linguaculture' to describe the intricate social interrelationship between language and culture. Culture is evidently defined in terms of what it comprises, reflecting its vagueness of character. Liu (2009), for example, asserts that it reflects societal and national beliefs, values, thought processes and social conventions in a territory. In Saudi Arabia, Islamic faith-based national traditions underpin every aspect of the lives of its citizenry, and behaviours are heavily influenced by Islamic religious principles (Althiabi, 2017). It is not proposed to address the effects of Islam on the principles of learning practice and the Saudi educational framework. Unregulated autonomy and freedom of access to information facilitated by social media learning, however, explain the teacher presentation-controlled pedagogy traditions in education. It is not unusual for cultural and traditional imperatives to guide what is taught in national education systems in the East or West, but the Saudi government is taking steps to open its markets to the world and will undoubtedly assimilate other practices (Al Yousef, 2016).

Liddicoat and Scarino (2013) point out that cultural meanings particular to one language may cross borders in different ways and, thus cultural awareness must form part of L2. Linguistic competence includes understanding of the country, culture and grammatical forms and meanings of the target language (Balboni and Caon, 2014). Integration of cultural teaching and intercultural sensitivity and awareness into language learning must, therefore, inform pedagogical practices and curriculum design (Banks, 2013). This will be reflected in the methodological reflection in this study, although it is not proposed to separate lessons in culture from the use of social media in language learning.

Community and culture are dynamic, subject to change and adaptation over time, particularly in a global framework of the multicultural mix and exposure facilitated by migration, business and, in the context of this study, access to and exchange of knowledge and information through ICT (UNESCO, 2009). This is arguably a reflection of political and economic national need in a diverse and vibrant market. As such, Atkinson (1999, p.626) asserts that culture is not "unchanging and homogeneous, an all-encompassing system of rules or norms that substantially determine human behaviour"; rather, it is an obverse explanation of culture, rather than an explanation of what it actually comprises, that nevertheless reflects the changing nature of its influence on language and communicative interaction.

This is exemplified in Saudi Arabia by the government initiatives to open its domestic markets to the world, reducing dependence on finite natural resources and inviting new industries from nations with different ways of living and doing business. As is the case with this author, a scholarship programme aids travel and study with the inevitable result of exposure to a diversity of values, traditions and morality (Al Yousef, 2016). Alyami (2016) highlights the profound change in the cultural, education, business and work roles of women in the Kingdom over recent decades, a developing area of Western-influenced human rights.

Such liveliness that underpins culture, it is argued, need not undermine its fundamental importance to the nature of a country and its education principles, but an understanding of its evolution facilitates communication and understanding (UNESCO, 2009). Culture nevertheless inhibits its integration into language learning in a mass education context, an argument for promoting individual autonomous learning through the less-formal digital technology network for those motivated to improve and expand knowledge and competence. That is a basis of the aims and objectives of this study and student involvement in the research project design implementation.

2.13.1 Integration of Cultural Awareness with Foreign Language Learning

Culture affects the behaviours of people and, therefore, the way they communicate and use language, be it in a formal manner or in casual conversation (Hamza, 2007). This can make it somewhat difficult for educators to formally teach the diversity inherent in a target language to facilitate the communicative competence of the learner. Byram (1997a) asserts that it is not, therefore, possible to develop a generalised syllabus which accommodates the imperatives of linguistic and culturally based language learning with institutional teaching being based on the origin, age, purpose and national culture of the learner's life. Whilst vital to "the importance of preparing students to engage and collaborate in a global society by discovering appropriate ways to interact with people from other cultures", there is typically no consensus on what or how to precisely develop, teach, and measure learners' competence (Moeller *et al*., 2014, p.2).

There has been little diversity in the language-culture context of the traditional Saudi classroom, founded on the basis of Islamic principles and ways of thinking. There is no formal process of institutional promotion of communicative interaction with target language native speakers, nor are there generally accessible opportunities, save through the government scholarship programme (Alsaif, 2018). This deprives institution-based learners

of the chance to develop an empathy and understanding of differences which can only come from interaction, hence the importance of foreign-based, intercultural education to the economic future of the KSA (Georgiou, 2010). Such opportunities may not be available to all learners, but the effectiveness of language education evidently depends on the integration of cultural teaching in an EFL curriculum.

The Saudi Vision 2030 initiative recognises the need for cultural interaction in the global learning context to enhance personal experiences and economic development (Al Yousef, 2016). This imperative can be described in terms used by Fantini (2009), whereby promotion of cross-cultural awareness, global competitive intelligence, cultural competence, cultural sensitivity, ethno-relativity and international competence are incorporated into the pedagogical awareness of teachers. It is arguably a fruitless ambition to integrate all considerations and explanations of cultural interaction into the finite time and curricular resources of formal mass classroom teaching. It is beyond any but the most impractical reflective processes of curriculum development to teach such concepts and techniques, but motivated students may find themselves exposed to their application through technology platforms.

The intercultural communicative competence (ICC) principle is multifaceted, and formal curricular qualification must be the objective of teachers, using resources that are of value to outcomes (Siregar, 2016). Traxler and Kukulska-Hulme (2016) suggest there is a global homogenisation of language education methods, and traditional Saudi ESL practices, for example, are predicated on English resources from English sources. This arguably accounts for poor outcomes due to their failure to reflect the Saudi faith and cultural values. Cultures are not homogenous, and the failure to account for student backgrounds does not promote motivation to learn (Alkutbi, 2018).

Kukulska-Hulme *et al*. (2017, p.222) suggest, somewhat charitably, that "course books based on the communicative approach have continuously striven to replicate the real world and to script authenticated language". Teaching has to adapt to meet the changing national and economic environments and, in the learning of foreign languages, the most readily accessible method of contextualising understanding and competence is in the use of digital technology (Kukulska-Hulme *et al*., 2017). The cultural enquiry is complemented by social interaction in the building of an online community of learning. The design of this study will seek to integrate standard requirements with cultural principles to facilitate context and understanding, and the use of the learner's own level of motivation in the use of the mobile digital devices to investigate further, and no presumptions are made about the future plans of the students involved in this study. However, much of the basis for the successful meeting of the objectives of the research is an investigation of student assessment of how digital technology enhances learning, understanding and communicative competence in a global, intercultural and interactive network. This is not an effect which can be quantitatively measured through testing outcomes, if only because of the rather nebulous concept of culture (Traxler and Kukulska-Hulme, 2016).

The autonomy of m-learning, more informal than classroom presentation of knowledge, does not necessarily undermine Saudi cultural traditions and standards by opening access to potentially conflicting values, but may indeed enhance understanding, competence and curriculum outcomes (Georgiou, 2011). Immersed as it is in a diversity of definitions and opinions, it is perhaps pertinent to adopt the 'linguaculture' theory of Agar (1994, p. 28). He describes a symbiotic, interdependent relationship: "language fills the spaces between us with sound; culture forges the human connection through them".

2.14 Theoretical Perspective of the Study

The characteristics of mobile devices have enabled them to be made suitable for a wide range of learning activities, but this makes developing or specifying an all-embracing theory of learning with mobile devices and media problematic (Traxler, 2009). Traxler (2009, p.6) suggests that the m-learning community needs to deal with three specific choices and issues in their quest for a viable learning theory:

i. import their theoretical base from 'conventional' e-learning philosophies, then seek adaptation;
ii. develop a theory locally from scratch, then worry about validity later; and
iii. attach its concept to some more general and abstract theory before being concerned with how it fits.

Others have also claimed that conversation theory (Pask, 1975) and social constructivist theory (Browne and Campione, 1996) could be applied to m-learning environments since they offer opportunities for participants to communicate and collaborate within the learning process (Bowman and Bowman, 1998; Karayan and Crowe, 1997; Paloff and Pratt, 2001). However, it should be pointed out that these theories significantly pre-date the development of current mobile capacities. Nevertheless, it can be noted that criticism of Siemens' connectivism lies in the argument that it is simply a pedagogical development of constructivism (Garcia *et al*., 2014). Even so, it is beyond the scope of this work to become embroiled in a competitive argument on the cogency of theories, when the focus is to simply point out elements which apply in the course of the research programme. Naismith *et al*. (2004) add to the traditional theories, contextual situationism, collaboration and teacher-supported activities, which arguably fit Traxler's trial, error and fix approach to learning theory formulation, each being adaptable to the principles' philosophies.

One of the obstacles to theory development in this area lies in the rapidity of digital device and technology progress and improvement. In the realm of technology-based education practices, most of the older mobile device studies reviewed tended to focus on examination of the behaviourist and cognitivist approaches to learning due to the simplicity of earlier mobile technology. The early digital capacities lacked variety in their interactive communication potential for learning activities due to their limited functionality, although evidently, the SMS was a popular research subject on knowledge transfer. Nevertheless, the small screen and keypad made it practically difficult for a mobile phone to facilitate a learning task that a PC or a laptop could easily run. As a consequence of its early hardware limitations, m-learning came to be known for its simple representation of knowledge and learning activities, giving rise to a learning strategy judgement of 'oversimplification' (O'Malley *et al*., 2003).

Therefore, extensive research is required to establish more rigorous theoretical foundations (Cheung and Hew, 2009). There is a need for researchers to test, define or draw out the kinds of theoretical principles that would be effective for mobile language learning design. As Traxler (2008) implies, the search starts with associative attempts to relate MALL to existing philosophies, then modifying and refining these with an ai of creating a clear definition of purpose for the concept.

Technology and academic discourse have been the main topics of this part of the review of education theory development. The student is an integral part in a mobile learning practice since he/she is the principal 'practitioner' who uses the mobile device for learning. Furthermore, students' voices must be heard, and students themselves need to contribute more to their learning process and experience their own contribution in reality. Traxler and Kukulska-Hulme (2016) point to a shift from teachers being the sole providers of knowledge to a closed class of learners to broader student involvement in the preparation and conduct of

their own education. This is incorporated into the design of the empirical study of this research through the direct feedback sessions, which follow extra-classroom activities.

2.15 The Practice-based Perspective of the Study

Few studies have capitalised on the mobility of students and the varied contexts available outside of classrooms and, as such, contextual learning has not been adequately researched; prior language learning studies concentrated on mobility rather than the dynamic external environment. This is one of the problems with techno-centric research programmes focusing on student views. Implications of contextual m-learning and context-awareness approaches have not yet been investigated in a language learning context.

Learning designs in many of the reviewed studies were teacher-generated, understating the importance of student perspectives, given that they are the primary consumers of m-learning. Nevertheless, the interconnections of teacher-student collaboration are two sides of the same challenges in EFL, with direction and instruction offered in the pursuit of self-learning (Honigsfeld and Dove, 2010). There remains a significant element of 'teacher-generated' directed learning in this research, but this is tempered with a feedback process which facilitates student input into their m-learning.

Prior studies have also used a variety of mobile devices as a basis for their research, from PDAs to iPads to mobile phones, with others utilising specially developed institutional software programmes rather than the broad range of proprietary media available online, which students are more familiar with. Wishart (2008) found that participants in her study were keen to use "familiar" technologies, including their mobile phones, and were not enthusiastic about exploring the iPad functionalities that were focused on in that study. It is important to note that at the time these existing studies were conducted, smart phones and their range of sophisticated applications and capabilities were not available at the same

technological level they are today. They are yet to be fully investigated in terms of their value in language learning, and that is the basis of this study: the use of the mobile smartphone and social media platforms in education.

2.16 Summary and Conclusion

There is a concern that an increase in learner autonomy will dilute traditional societal cohesion, but it is not appropriate to see this as an inevitability of technological advancement. Every nation is based on values, be they secular or religious and culture need not be undermined for what is essentially the quest for commercial success. Nor should the education system inhibit individual, personal development; faith must be placed in the ambitious learner to follow the path he or she determines to be appropriate. It does not undermine research which suggests interaction is a necessary component for learners to develop productive skills (Gass, Behney and Plonsky, 2013).

The rapid involvement of digital technologies in learning and teaching EFL has attracted and motivated researchers to examine the extent to which the use of such devices may support the teaching and learning context. The response has been some enthusiasm tempered with classroom suitability concerns, technical difficulties with the software and the level of digital skills students have. This last consideration is somewhat surprising given how much time young adults spend engaged socially and in gaming on their smartphone devices. WhatsApp is essentially an expansion of both of those capacities into the realm of preparing for a successful economic future.

There are of course more covert, less visible obstacles to the independence of learning offered by the mobile app in Saudi Arabia, a traditional, faith-based society with strong values of expected conduct, not least the segregation of genders in the education framework and freedom communications between them. Words carry meanings and implications, and the

use of a mobile app undermines social control over the content of learning English. The role played by mobile social media, such as WhatsApp, may be envisaged by the developers as an all-round, available to all support for learning in the development of student communities online, and on the same path to knowledge enhancement.

The cultural environment of learning adds complication to this scenario. Nevertheless, permission having been given by the appropriate education authorities in the Kingdom, this study will fill a gap in empirical research on the changes sponsored by the government, to ascertain the role the smartphone may play in promoting language learning using mobile social media applications. This literature review has been of considerable value to the researcher, highlighting the inherent learning potential of the mobile app and its use in the traditional education framework of Saudi Arabia. It has further developed a more focused perception of the prospective role of mobile apps in education. Modification of the aims and objectives was undertaken as a result of the knowledge attained from previous academic studies.

This review of current research literature on EFL instruction has highlighted certain: the necessity to meet students' needs, the indication of pedagogical areas that need improvement, the necessity to avoid integral teacher-centrism, and the lack of contextual learning opportunities. There is considerable potential for learning in a shift of emphasis to student-centred, collaborative and contextual EFL learning, enhanced by computers and mobile technology but the latter in particular requires a more rigorous theoretical basis due to its being a relatively young field of research. For this same reason, this review has justified the need for a more rigorous theoretical background for mobile learning. The chapter then presented definitions and educational affordances of mobile technology and mobile learning, followed by a review of contemporary learning approaches to mobile language learning. An overview of the role that the social media can play to improve language learning in general,

and mobile language learning in particular, was also discussed. A summary of both theoretical and practical gaps in the literature was provided.

In the next chapter, the methodological issues and research design of the current study are discussed. This includes a rationale for utilising design-based research as a methodological framework for the study and its implications for mobile language learning. Chapter Three provides an overview of the context of the study including its participants and the university where the study took place. The chapter also provides a description of the qualitative data collection tools and procedure, and the process of data analysis.

3 Chapter Three: Methodology

3.1 Introduction

The first section of this chapter will review a range of research philosophies, and the ways data for this study are gathered, analysed and used. The second section of the chapter constitutes a more detailed explanation of the aim of the research, linking the tools and methods that will be adopted to achieve it, and describing the design-based research methodology used, focusing specifically on the data gathering process used in the adaptive design of this study.

This chapter will justify the research strategy for the collection of data upon which the study is based and which serves to address the overarching aim of the thesis, which is:

To investigate the role of mobile social media platforms, accessed via the smartphone device, and its potential value as a learning support tool.

This will incorporate an examination of:

(i) how students can make use of mobile social media applications to motivate and enhance collaboration in English language learning

(ii) the cultural and contextual experiences of Saudi higher education learners with a view to improve retention and language use outcomes.

The discussion of alternative methodology models will illustrate how data for the study has been gathered, its application to the aim of the research and its relationship to the objectives set out to meet the said aim (Easterby-Smith *et al*., 2008). These objectives are to:

1) identify the learning strategies utilised by the students involving the WhatsApp social media platform;

2) investigate how social media interaction between students and teachers will improve language learning and knowledge retention through collaboration in activity planning and performance;
3) accumulate data on the attitudes and motivations of students in their use of social media through the smartphone in their extra-curricular language learning; and
4) show how lesson planning based on the interactive practices of the DBR model improves motivation, self-learning, collaboration, and student involvement in their own education, all via DBR Connectivist Mobile design.

The context for the study is Al-Imam University in Saudi Arabia. Account will be taken of the introduction of social media application into a traditional, teacher-led educational framework and the examination of the value of the smartphone software as a complementary tool to the promotion of more independent learning. These include an investigation of the reflections and attitudes of students to mobile learning using the hardware technology of smartphones to access and learn from social media application. The focus is on smartphones rather than desktop or laptop computers, or indeed pads, because their use is all pervasive in modern society.

With that in mind, the initial objective of the formulation of the methodology was to identify the most effective and appropriate process of collecting and analysing data. Considerable caution has therefore been taken in this study task to analyse method options and techniques, in the knowledge that each has comparative flaws which the author will seek to overcome. Blaikie (2010) argues that researchers tend not to sufficiently appreciate the value of particular methods of presentation of substantive research, stressing the need for a structured approach to the elements of methodology, strategy and design.

Theory and practice must coalesce to direct the research and enhance credibility. This is a relatively new area of research, particularly in the Saudi context, and it is hoped that the results will facilitate a change in higher education practices in disciplines beyond the parameters of this language topic. It is with this broader application of the study in mind that the methodological principles embrace practices used in the mixed quantitative-qualitative research approaches as most appropriate to the achievement of the aims of the research. It is therefore important to discuss and explain the theoretical and philosophical underpinnings of the methods of data collection and analysis. Figure 3-1 provides an overview of the contents of this chapter.

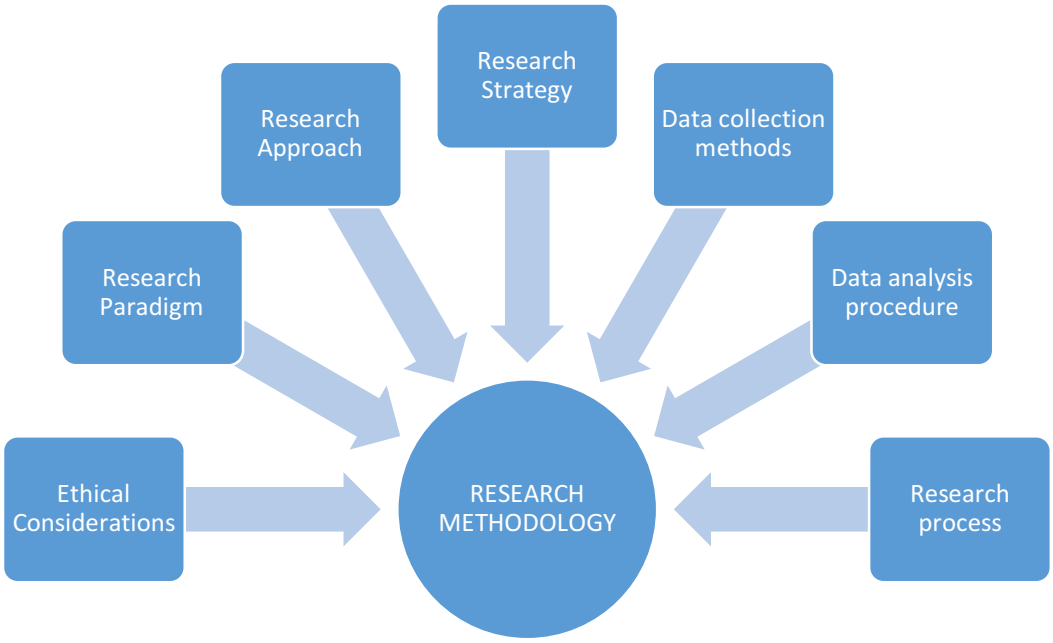


Figure 3.1 Research Methodology

3.2 Section 1: Research Paradigm: The Approach to Research and Philosophy

It has been commented upon throughout Chapters One and Two that this research is student rather than techno-centred; its purpose is to examine the reflections, attitudes, perspectives and assessments of learners concerning what they believe to be the value of smartphone

access and social media to their English language education. The focus of the data collection process and research design is therefore predicated on qualitative methods, rather than quantitative testing which may produce more objective outcomes for the evaluation of benefits but might fail to fully reflect what the user-learners think of their social gadgets as educational tools. The approach to methodological theory therefore impacts on the methods of study and data gathering, the former constituting the philosophy of systematic, scientifically based research, the latter a mechanism by which it is achieved (Achari, 2014).

It is pertinent to note the logistical considerations in the preparation and planning of this study. Saunders (2012) postulates that the veracity of data and findings, the repeatability of the methods of investigation and positive academic critique of the findings, are impacted on by the time and duration of the research, finance and other resources, compliance with established ethical standards and the choice of appropriate techniques of data collection and analysis. This requires clarity in the design of the project, especially in the context of this study where access to participants is limited by distance, given the researcher is on a course of post-graduate study in the UK and the subject students are based in Saudi Arabia.

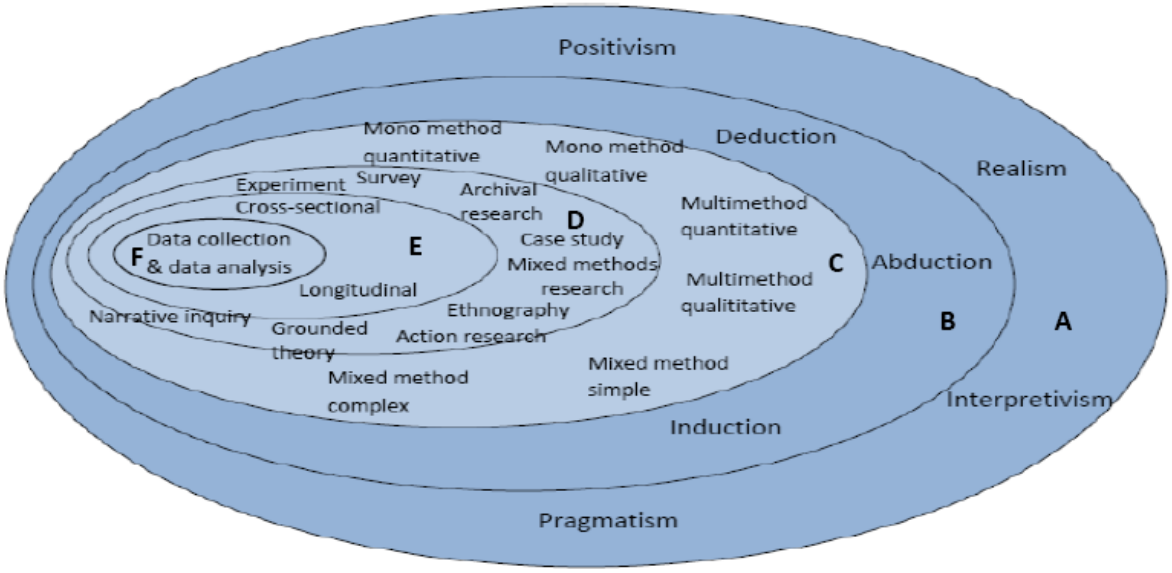
A paradigm, in broadest terms, is widely accepted as a set of "*worldviews and belief systems that guide researchers"* (Teddlie and Tashakkori, 2009, p. 17). Academics consider there to be three principal, paradigms which guide the conduct of research: (i) quantitative - a positivist paradigm predicated on the objectivity of data gathering, somewhat replaced by more critical post-positivist thought which recognises that complete researcher and participant detachment is not achievable; (ii) qualitative - understanding that information is "*value laden"*, subject to interpretation, and that it is difficult to reach a definitive cause and effect conclusion; and (iii) mixed methods – which essentially seek to reach evidence-based conclusions by coalescing techniques of information gathering, which allows for bias to be limited and checked (Houser, 2015, pp. 102–103).

The quantitative and qualitative determination of real and interpretive paradigms, which give rise to the adoption of the methodological theories apposite to this study, are those which are traditionally employed in social science research to facilitate an understanding of the data gathered during the research where human subjects are questioned and tested. Quantitative research involves a numerical representation and manipulation of observations for the purpose of both describing and explaining phenomena; it is a replicable process which will produce similar results across different subjects (Rasinger, 2013, p. 27). Variables which are taken account of might include financial constraints, software availability and access to app functions, as well as the personal attributes of learners such as motivation (Alrabai, 2014). These cannot be measured within the institutional limitations of this study, but will be commented on as potentially significant where appropriate.

In contrast, qualitative research uses a broader data collection methodology of text, opinions, images and impressions, seeking to understand a phenomenon without necessarily seeking a definable truth or hypothesis (Guest, *et al*., 2013, p. 3). It places emphasis on processes and meanings which cannot be rigorously examined or measured in terms of their quantity or frequency, in contrast to quantitative principles which seek the reconciliation of variables in behaviour to explain a defined process or action (Bryman and Bell, 2015). The methods are devised and actioned in a manner appropriate to the different stages of research to achieve the study goals: the pre-task questionnaire in stage one, for example, is for the purposes of induction, qualitative to mine data from learner perspectives on the value of the apps, and motivation and attitudes that are not directly observable or which are "*in someone else's mind"* (Patton, 2015, p. 341).

In order to appreciate how the theory and its associated ontology and epistemology will have a major impact on the way in which the research is conducted and evaluated, reference is

made to Saunders *et al's.* (2012) 'research onion', which highlights the process of the path from methodological philosophy to method.



KEY

A	**Philosophy**	**C**	**Methodological choice**	**E**	**Time horizon**
B	**Approach**	**D**	**Strategies**	**F**	**Techniques and procedures**

Figure 3.2 Research Philosophy

The outer layer of the onion, A, addresses the range of ontological philosophies, foundations and assumptions that the researcher makes about the nature of reality and how it is understood. The epistemological approach, B, describes how information is known and managed. Methodological choices adopted in the collection of data form the next layer of reflection, C; these involve the research techniques used to investigate and collect data. Saunders *et al.* (2012) call layer D 'strategies', although a simpler definition would be methods of data collection, regulated by issues of time and access, a 'snapshot' of the opinions of the participants pertinent to the context of the study (IWH, 2009). Quinlan (2011) describes this diagramatical representation as the emergence of a methodological approach from a conceptual framework.

3.2.1 Reflection on Ontology

The perspective of this research draws an initial distinction between realism, the search for a 'positive truth', and the relativist approach, a more individualised context of reality and perception based on subjective perceptions (Killam, 2013, p. 16–17). Chilisa and Preece (2005 pp.23–24) suggest that with regard to a positivist ontology, "*if something exists, it exists in quantity and can be measured."* In the context of this study, whilst educational outcomes from testing and grading lend themselves to comparative quantifiable measurement, an educational framework may be described as a '*social world governed by normative expectations and shared understandings'* (Rachel, *et al*., 2013, p.24) and this positivist perspective does not satisfactorily enable conclusions to be reached regarding learners' perceptions of the value of social media, with a relativist approach, discussed below, being more pertinent to the evaluation of the data.

This leads on to the ontology and reflective practice of research planning involving the concept of phenomenology, compared in Table 3-1 to the positivist paradigm by Kelemen and Rumens (2008). As they explain, the two main opposing philosophical paradigms are positivism and phenomenology. It is noted that the positivist approach is best suited to the regulatory standardisation of the natural sciences, but this fails in the social realm of study as it does not account for the subjectivity of individual persons and their perceptions of the phenomenon being examined (Quinlan, 2011). Phenomenology employs a more qualitative and naturalistic approach to data collection and analysis, and an inductive and holistic understanding of social contexts and occurrences (Kelemen and Rumens, 2008). The intervention of pragmatism is arguably a medium path for ameliorating the rigidity of the postitvist-phenomenological approaches, drawing its justifications and strengths from each side (Johnson and Onwuegbuzie, 2004). The primary philosophical approach of this research is phenomenological, supported by pragmatism in the adaptability of the design to the fluid

needs of students and the classroom, utilising a qualitative collection and evaluation of data methods to achieve the study aims.

	POSITIVISM		PHENOMENOLOGY	
	POSITIVISM (NAÏVE REALISM)	POST-POSITIVISM (CRITICAL REALISM)	CRITICAL THEORY HISTORICAL REALISM	INTERPRETIVISM/ CONSTRUCTIVISM/ RELATIVISM:
Ontology	An apprehendable reality is assumed to exist, driven by immutable natural laws. The true nature of reality can be obtained by testing theories about actual objects, processes or structures in the real world.	Reality is 'real' but only imperfectly and probabilistically apprehendable.	Social reality is historically constituted: human beings, organisations, and societies are not confined to existing in a particular state.	The social world is produced and reinforced by humans via their actions and interactions. Realities are local, specific and constructed.
Epistemology	Objectivist approach: hypothesis verification via rigorous empirical testing; search for universal laws or principles; seeks linkage amongst explanations, predictions and control	Modified objectivist approach: findings probably true	Subjectivist approach: Knowledge is grounded in social and historical practices; Understanding of the social world from the participants' perspective, by interpretation of their meanings and actions; researchers' prior assumptions, beliefs, values and interests always intervene to shape their investigations.	
Methodology	Experimental: uses verification of hypotheses; chiefly quantitative methods	Modified experimental: uses falsification of hypotheses; may include quantitative methods	Dialogic/ dialectical: uses critical ethnography; interpretive case study; action research	Hermeneutical/ **dialectical:** uses holistic ethnography; interpretive case study; action research

Table 3.1 Adapted from Kelemen and Rumens (2008, p.26)

The value of the smartphone as a tool for learning is necessarily unmeasurable given that the activity of learning is internal and a matter of personal perception; it happens in the mind of the student (Nunan, 1992). The collection of phenomenological data must accommodate the source whilst still using systematic, scientific methods for its compilation (Creswell, 2012, p.56).

3.2.2 Epistemological Approach

Epistemology is defined as "the characteristics, the principles, the assumptions that guide the process of knowing …" (Gialdino, 2009, p.4). It is essentially the theory through which researchers seek what is believed about the focus of their investigation; in this project the assumption being that social media platforms which facilitate student interaction and collaboration have the potential to improve learning. Learning is a continuing process throughout life, improved and embedded by communication and exchange, and not simply a classroom activity led by a teacher-presented curriculum. Therein lies the basis for the development of a "view of what we can know about the world and how we can know it" (Marsh *et al*., 2018, p.18). There is a high level of student involvement in this proposed study design, which is aimed at an evaluation of what students perceive as the benefits of social media learning, ascertaining from the context "a set of assumptions, concepts, values, and practices that constitute a way of viewing reality." (McGregor and Murnane, 2010, p.421). This study focuses, at least in part, on an epistemological pragmatist approach to a realist ontology to determine how EFL student's learning can be improved through guided smartphone-accessed social media activities promoting peer interaction and collaboration (Gill and Johnson, 2010). There are no financial stakes in the access or success of the social media application - *WhatsApp* in the case of this study - and the only concern of the study is its value to vocabulary learning, formative assessment and continuing training, and the promotion of student autonomy, self-learning and summative success. Academic credibility

lies in the ability of the researcher to maintain objectivity in the interpretive "*understanding*" process of examining the meaning of data (Kasi, 2010, p. 95). Epistemological reality sees the research process as the search for evidence of what is perceived by students to actually work for them in the use of a relatively simple to operate mobile app, capable of being accessed anywhere, any time the learner wishes to independently learn.

3.2.3 The Scientific Approach to Data Collection

A scientific approach seeks to provide *"explanations of educational activities and behaviours"* (Scott, 2002, p.83). Critical analysis of quantitative data and academic qualitative knowledge dominates the method, aimed at a thorough insight into the issues investigated in order to deliver coherent conclusions, and truths, thus reducing the tendency to "*speculate*" (Krishnaswamy, Sivakumar and Mathirajan, 2009, p. 6). It is differentiated from the:

1) utopian - seeking 'ideal explanations' from research data,

2) deliberative - a practical theory judged favourably only where it leads to improvement in educational practice and

3) evaluative - somewhat static in the contextual justification of existing practices (Scott, 2002, p. 84).

It is the third of these features which provides the basis for this study, given that the quality of empirical data is variable in the context of the different motivations, personalities and preferred methods of learning of the subjects. This does not undermine the importance or credibility of the results, but is simply indicative of the reflection necessary to provide cogency and credibility to the results.

In order for the study to achieve credibility, not only for the specific EFL course but more generally, May (2011) explains that on the subject of research philosophy "*there are not only*

different perspectives on a given phenomenon, but also alternative methods of gathering information and analysing the resultant data" (p.8). The decisions made on the utility of philosophy and practice, as Cohen et al. (2018) suggest, has the prerequisite that the researcher needs to understand the world around him or her, how this world is viewed by participants and "what we take understanding to be and what we see as the purpose of understanding" (p. 8).

The development of the choice of research paradigm is to ensure credibility and trust in the nature of this study and avoid the personal bias of the researcher which is inherent in the reader's reflection on the conclusions reached (Collier, 1995, p. 17). Khanal (2012) argues that regardless of what a paradigm constitutes or means, they are either positivist or interpretivist. They both seek to attain explanations of social phenomena, albeit through different forms of information collection and assessment. Hammersley (2005, p.35) considers this to raise tension and criticism of methods between adherents of competing philosophies, with early positivists becoming somewhat 'fetishised' over interpretivist researchers. Where research funding was sought, it was considered preferable to promote the quantitative, positivist design for the pursuit of 'truth' (Ungar, 2006, p.269).

The study has no bias toward what Scott (2003, p.84) calls the seeking of utopian explanations which support a hypothesis of inherent value in the use of social media, nor a deliberative and preconceived view that it is a good addition to the teaching and learning process. That relates to the gleaning of the students' perspectives, albeit predicated on the literature review background which has facilitated reflection on the data gathering methods of the design-based programme.

3.2.4 Positivism in Social and Educational Research

Positivist approaches consider the truth to be static and thus identifiable, able to be repeated on examination of similar circumstances, events or phenomenon (Leedy and Ormrod, 2005 p.9). Positivist research is based on the finding of facts, the objective measurement of social issues to determine a fixed reality upon which a teacher can rely in his or her pedagogical practice in class (Walliman, 2010, p.89). Variables have an inherent autonomy which can be associated with the effects of other variables, aiding anticipation and the development of strategy (Leedy and Ormrod, 2005, p.34).

Nevertheless, the quality of the research data from an empirical study is impacted by such unmeasurable variables as student-participant personality, motivations and the learning theories pertinent to the way data are gathered and managed. The researcher is further aware that learning is institutionally regulated by government standards, and the scientific discourse must aim to meet the objectivity requirements understood by stakeholders (Bracken, 2010). Cohen *et al*., (2018, p.8) assert that the recipient of the research, from the teacher to the stakeholder, must be able to ascertain how the learner perceives value is added to their knowledge accumulation from the focus of the study: “what we take understanding to be and what we see as the purpose of understanding”. An outline of the pertinent features is shown in Table 3-2 below.

RESEARCH APPROACHES	
Deductive	**Inductive**
Testing theory	Building theory
Deductive reasoning moves from general inferences to specific instances (Collis and Hussey, 2003); also known as the 'top-down' approach (Trochim, 2006)	Inductive reasoning moves from specific instances or observations to statements of broader patterns, theories and general inferences (Collis and Hussey, 2003)
Develops a hypothesis and theory and designs a research strategy to test that hypothesis based on the collection of empirical quantitative data (Saunders *et al*. 2012).	Develops a theory as a result of collecting and analysing qualitative data (Saunders *et al*., 2012)
A highly structured approach based on scientific principles entailing: • Need to select samples of sufficient size in order to generalise conclusions • Need to explain causal relationships between variables • Application of controls to ensure validity of data	A more flexible approach which allows changes of emphasis as the research progresses
Seeks to test theory so previous literature is used to identify questions and/or interrelationships before data are collected (Creswell, 2003)	Seeks to gain an understanding of the meanings that humans attach to events and requires a detailed understanding of the research context
Researcher believes that the researcher is independent of what is being researched	Researcher believes that the researcher is part of the research process

Table 3.2 Based on Trochim (2006)

Saunders *et al*. (2012) add "abductive reasoning" to fill the gaps in deductive and inductive approaches. This involves collecting data to explore a phenomenon or identify themes and explain existing patterns to generate a new, or modify an existing, theory in order to test a

hypothesis. It links to the principle of pragmatism in adapting an approach to data gathering and analysis in the process of qualitative based empirical research.

3.2.5 The Principle of Pragmatism

Tashakkori and Teddlie (2010, p.5) suggest that 'pragmatism' does not simply allow for the adaption of research theories to practice as data gathering and analysis develops, but is indeed a separate paradigm, rejecting "the either/or choices associated with the paradigm wars … and acknowledge[ing] that the values of the researcher play a large role in the interpretation of results". Philosophical theories are of little assistance to the evaluation of knowledge if they fail to practically adapt to a variable data collection context. There is no 'one-size-fits-all' theory which addresses the range of research studies which need to be conducted on diverse issues in social and educational environments, with contrasting subjects and objects of study. Part of the aim of this study, for example, is to investigate the value of social media in the autonomous learning of essentially different students with different views, priorities and personalities; for this reason, the research design must necessarily be able to adapt to feedback and the changing needs of their learning.

Nevertheless, the author must remain aware of the effect of pragmatic adaptation of the research methodolgy on the veracity and credibility of its findings. Klenke (2016) asserts that in the collection and analysis of qualitative data, the objectivity of the researcher will be examined and critiqued, arguably more so when there is an adaptation of empirical methods where deemed practically necessary. From a positivist perspective, it must be ensured that "validity, generalisability, replicability and falsifiability" are not sacrificed to meet apparently pre-determined hypotheses (Klenke, 2016 p.13). Creswell and Guetterman (2019) emphasise that the interpretive practices inherent in the practice of pragmatism need to be made clear and correlate with the positivist approach to maintain credibility of the ultimate findings. Indeed, it is expected that in the conduct of this research study that class-community

participation, feedback processes and behavioural shifts in the course of the study will be reflected by the participant-students in their knowledge accumulation and management (Masino and Nino-Zarazua, 2016).

On the contrary, pragmatism cannot be considered a paradigm as it does not align with any philosophical system (Hussain et al 2013). Hussain et al (2013) argue that it could be considered a research approach regardless of whether the reality is conceptualized as singular or constructed differently by individuals. That is to say, pragmatism does not belong to any one system of philosophy or reality. Feilzer (2010) puts it differently, positing that pragmatism "accepts, philosophically, that there are singular and multiple realities that are open to empirical inquiry and orients itself toward solving practical problems in the ''real world'' (p. 8). Consequently, "pragmatism allows the researcher to be free of mental and practical constraints imposed by the ''forced choice dichotomy between positivism and constructivism'' (Creswell & Plano Clark, 2006, p. 27). Instead, pragmatist researchers focus on the 'what' and 'how' of the research problem (Creswell & Plano Clark, 2006; Creswell, 2003; Tashakkori & Teddlie, 2003; Husain et al 2013). In other words, the pragmatic paradigm prioritizes research questions and "applies all approaches to understanding the problem" (Creswell, 2003, p.11).

To serve the purpose of this study, I have placed my research problem as central and chosen to be free of any philosophical position. I have adopted the pragmatic paradigm as it allows me to practically choose the most likely appropriate data collection methods using both qualitative and quantitative strategies to answer the research questions, with no philosophical loyalty to any of the dichotomous paradigms.

3.2.6 Methodological Research Reflections

Fundamentally, a paradigm involves "*worldviews and belief systems that guide researchers"* (Teddlie and Tashakkori, 2009 p.17). They generally fall into three formats, programmes of data gathering and research models and philosophies: the (i) quantitative - predicated on gathering data which can be objectively analysed, to produce numerical support for conclusions drawn from study methods; (ii) qualitative - 'value laden', interpretive evidence of a phenomenon or investigatory focus; and (iii) mixed methods - a coalescing of gathered knowledge which aims to balance biases inherent in the primary methodologies (Johnson and Christensen (2019, p.33). It is borne in mind that all data collection methods necessarily carry within them the potential for natural human researcher bias and can never be truly objective (Creswell, 2013). Table 3-3 sets out the salient features of the qualitative and quantitative research methods, and the mixed methods approach, broadly utilising methods to best suit the differing aspects of an empirical research programme.

Table 3.3 Features of research methods

RESEARCH METHODS		
Quantitative	**Mixed**	**Qualitative**
Predetermined	Combines predetermined and emerging methods	Emerging
Emphasis on testing and verification		Emphasis on understanding
Logical and critical approach		Interpretative and rational approach
Focus on facts and/or reasons for social phenomena		Focus on understanding from respondent/informant point-of-view
Closed questions	Closed and open-ended questions	Open-ended Questions
Data from instruments, performance, attitude, and census	Multiple forms of data drawn from various sources	Data from interviews, observation, documents and audio-visual sources
Controlled measurement		Observation and measurement in natural settings
Objective 'outsider view' which assumes distance from data		Subjective 'insider view' which assumes closeness to data
Statistical Analysis	Statistical and textual analysis	Textual Analysis
Results Orientated		Process Orientated
Particularistic and Analytical Perspective		Holistic Perspective
Hypothetical-deductive focus on hypothesis testing		Explorative orientation
Generalisation by population membership		Generalisation by comparison of properties and contexts of an individual organism

Using the qualitative approach, the researcher will collect views, opinions, and statements of attitudes and impressions based on real life experiences which subjectively relate to personal student participation and understanding (Guest, *et al*., 2013). Bryman and Bell (2015) assert that qualitative methods may result in data which is not conducive to rigorous measurement but has a particular value in explaining social phenomena. There is little value in numerical analysis in this research where the purpose is to ascertain from student-users of the smartphone and social media in their learning, their perspectives and largely personal assessment of the effects of this use on their attitudes and motivations for learning English (Patton, 2015). This justifies the use of the qualitative research approach int his study, given its aim of exploring the educational value of social media in student life and to understand its usefulness in education from the learners' and teachers' perspectives (Collis and Hussey, 2003). What is behind the aims of this research is a desire to investigate "a source of well-grounded, rich descriptions and explanations of processes in identifiable local contexts" which will enable better understanding of the experiences and the unique points of view of student users of social media (Miles *et al*., 2014).

Saunders *et al*. (2012) further categorise research methods into data gathering which is both explanatory - illustrating a social phenomenon, examining causal relationships between variables, describing and illustrating observations, events or situations from a context (Robson 2002) or the social behaviour of study participants (Hesse-Biber and Leavy 2010) - and exploratory - investigating "what is happening; to seek new insights; to ask questions and to assess phenomena in a new light" (Robson 2002, p.59). This tends to focus on under-researched areas which lack clarity of insight into a phenomenon and aids identification of focus for further research (Hesse-Biber and Leavy, 2010).

3.2.7 Mixed-Methods Approach

In general, adopting a mixed methods research approach is when the researchers combine

quantitative and qualitative research techniques, methods, approaches, concepts or language into one study (Cresswell & Plano Clark, 2007; Yin, 2006). That is, as a methodology, it permits the employment of multiple philosophical approaches to answer research questions instead of limiting researchers' choices (Cresswell & Plano Clark, 2007; Johnson and Onwuegbuzie 2012). As a method, Creswell and Plano Clark (2011), Creswell (2015), Yin (2006), and Johnson and Onwuegbuzie (2012) state that it is an approach in which the investigator collects both quantitative and qualitative data. The two sets of data are analysed, and interpreted with the results based on the complementary strengths of both strands of data to better answer the research questions. This would not be possible if only qualitative or qualitative data were collected.

This approach, adopted herein for the reasons set out and clearly explained in the course of this chapter, facilitates the collection, use and evaluation of a broad range of data and information without compromising the academic acceptance of the research methodology where it is effectively managed and explained. Simply put, Leech and Onwuegbuzie (2009) this is a utilisation of a mix of methodological approaches pertinent to different parts and aims of the study. It uses the philosophies and practices of traditional, recognised processes, questioned only by the veracity of their implementation and researcher bias, rather than seeking novel ways of seeking understanding of personal, social and technological developments.

The opinions, strategies and assessments of a body of participant undergraduate students at the Kingdom of Saudi Arabia, Imam University however give rise to variable personal levels of motivation, imagination and skills in planning learning and assimilating knowledge which are not measurable in this research; every student is different. In the field of applied linguistics and education this research approach has been increasingly adopted for the last

three decades, combining different methods of data collection which complement each other (Dornyei, 2007). Mertens (2014), for example, suggests that using the mixed methods approach helps the researcher to highlight inconsistencies and identify contradictions and deviations in data collected and analysed. This allows the reader to consider and develop their own, alternative, evaluations of the data, perhaps as a basis for further research or practical action. The quantitative measurement of satisfaction and perceived value of this specific piece of mobile learning application, initially through the Likert Scale general enquiries of the student participant body was necessary to set a basis for quantitative testing and qualitative interviewing. It is a logical assumption that students will only use what they believe to be of value to their lives, hence the ubiquity of the smartphone device.

The mixed methodology of data collection utilised is well suited to dealing with a relatively small number of respondents, within a limited period of time and the cost- funding restrictions on this examination. Quantitative collection and analysis per se would be compromised by such limitations, and the results therefore of more academically challengeable value, particularly in the face of the number of variables, such as inherent motivation and attitude to learning of a diverse student body. It is noted that this form of methodology is supported by the comments of Bryman (2012) who considers it advantageous to adopt different data collection methods to offset any perceived weaknesses in the process. Johnson and Onwuegbuzie (2004, 15), too, assert "*If you visualise a continuum with qualitative research anchored at one pole and quantitative research anchored at the other, mixed methods research covers the large set of points in the middle area"* The combining of quantitative and qualitative methods is academically acceptable and desirable, giving "*a greater prominence to the strengths of the data collection and data analysis techniques with which qualitative and quantitative research are each associated*" (Bryman and Bell, 2015, p. 644).

There are other difficulties which arise in any data collection process, given the nature of a subject and the potential for bias which operates upon the researcher insofar as they concern motivations and stake in the result. The author is a university lecturer in linguistics but has no financial, emotional or cultural interest in the social media app or its manufacture and development. The motivation for this study is the assessment of value to students of this method of mobile technology learning. In the choice of the mixed methodology approach, a pragmatic perspective overcomes, or at least balances the limitations of other approaches. Reflection occurs on the part of the author in planning and assessment of results in this approach to seek elimination of personal choices and influence, not least on the time ordering of each stage of the quantitative and qualitative data gathering process (Johnson and Onwuegbuzie, 2004, p. 19).

The fundamental basis of the philosophical debate on research principles does not disappear with the decision to utilise a pragmatic paradigm as suggested by Creswell and Clarke (2017). The paradigms are not mutually exclusive, and indeed in the context of this study, given the constraints on access to the student body in Saudi Arabia and the need for practical methods of introducing independently accessible learning, are complementary. Rather it gives effect to a critical balance mechanism, offering a middle- way between methodology and philosophy so that 'real-world' research questions get answered (Johnson and Onwuegbuzie, 2004). This is highlighted by the specific mixed methods approach used in this study. In the mixed methods approach this will help place the quantitative findings in the context of the other objectives of ascertaining how students value the app as (ii) a support to their learning and (iv) attitudes and motivation to use their smartphone devices in learning. There appears little philosophical reason for consideration of the potential of integration and complementary practices as being binary and exclusive (Sandelowski, *et al.,* 2009).

Mixed method methodologists have devised more than 15 mixed method designs classifications drawn from diverse social science disciplines (Johnson and Onwuegbuzie 2012). Yet, Creswell (2015) indicates that there are more similarities than differences among these taxonomies. Therefore, in an attempt at providing a more practical classification, he proposes four major designs: Triangulation/convergent design, the embedded design, the explanatory design, and the exploratory design (Creswell, 2006). In line with Creswell (2006), Johnson and Onwuegbuzie (2012) advance a similar classification: convergent design, explanatory design, exploratory design, and embedded design. However, in his latest publication, Creswell (2015) divides mixed method designs under two broad classes, "basic mixed method designs" (p. 35) and "advanced mixed method designs (p. 42). The former comprises convergent design, explanatory design, and exploratory design, while embedded design, called intervention design, has been regrouped to be under the advanced design which also involves social justice, and multistage evaluation designs. The current study expands on the intervention / embedded design as it is employed throughout the study procedure. The next section describes the embedded experimental model.

3.2.8 The Embedded Experimental Model

The embedded experimental model is selected when the researcher collects and analyses both quantitative and qualitative data within a traditional mixed method study and in which one data set is embedded in a study based largely on the other data type (Creswell, Plano Clark, et al. 2003; Creswell, 2005, 2006, and 2015). For example, a researcher could add a qualitative strand to a quantitative methodology by conducting an experiment or intervention trial, or might embed a quantitative element in a qualitative methodology like a case study. Creswell (2015) assumes that this design is particularly useful to answer different research questions that require different types of data.

Creswell (2015) provides an explicit description of the procedure of the intervention design.

He clarifies that a problem is studied by conducting "an experiment or an intervention trial" within which a control group and an experimental group are identified. The experimental group only should undergo certain intervention for a period of time. Then, both groups would be pre- and post-tested to determine whether the intervention has an effect on the outcome of the experimental group in comparison to the control group which did not receive it (p. 42). Creswell (2015) shows that the researcher could add qualitative or qualitative data into the experiment at any phase either before, during, or after the intervention. The inclusion of qualitative data before the experiment, as Creswell (2006), (2015) and Johnson and Onwuegbuzie 2012) indicate, could be for the purpose of recruiting participants for the trial, helping in the design of the trial, or raising participants' awareness of the objectives and procedure of the upcoming trial. During the intervention, Creswell (2015), explains that qualitative inclusion aims to detect participants' experiences with the intervention activities, whether or not these activities gain participants' acceptance, and what amendments subjects suggest in improving their experience. Lastly, as he notes, the intervention design can integrate qualitative data after the said intervention as a follow up on the results allowing for qualitative understanding and to provide a more detailed explanation of the results, together with the statistical findings.

The current study favours pragmatism as a research paradigm as I aimed to liberate myself from rigorous research confines and use whatever methods seems practical to answer the research questions. Creswell's (2015) mixed method embedded experimental design was selected by collecting data using quantitative and qualitative instruments along various experimental stages, before, while, and, after the experiment to increase the overall validity of the study. This is due to the combination of advantages that can be obtained by using both qualitative and quantitative data, while simultaneously being able to minimize the limitations.

As such, triangulation, which is the "combination of two or more data sources, investigators, methodological approaches, theoretical perspectives or analytical methods" (Thurmond, 2001: p .253), was used within this study. Triangulation was necessary in order to increase internal and external validity and reliability within the research, but also to gain a more multi-dimensional perspective. It also reduced the overall bias within this research, which is an issue commonly noted in previous research and is therefore a way to counterbalance the weaknesses of one method with the strengths of another (Mitchell, 1986).

As such, before the commencement of the experiment, quantitative measures like questionnaires were used to collect the participants' current beliefs about vocabulary learning and expectations of usability of mobile phone learning. This was followed by qualitative measures like pre-focus group discussion to prepare participants for the upcoming experiment and to discuss some of the sophisticated concepts participants might have been faced with in the pre-study questionnaire. Then, after the intervention, post-task focus group and qualitative content analysis for WhatsApp contributions was conducted in an attempt to understand participants' roles in learning. This was essential to understand how and why learning took place. The inclusion of a control group is necessary in the experimental design since it aims to establish possible cause and effect relationship between the independent and dependent variables (Creswell, 2012). In other words, when the independent variable affects the dependent variable, we can conclude that the independent variable is caused by the dependent variable. This impact is assessed by giving an intervention to one (experimental) group and withholding it from another (control) group and then determining how both groups scored on an outcome (ibid).

However, Creswell's embedded experimental design has been modified to better serve the main objectives of the current research. That is, rather than dividing the research sample into

an experimental and a control group to examine the cause and effect relationship between the use of mobile phones and learning, I decided to use the whole research sample as an experimental group for the following reasons.

First, this study takes into account the findings of previous studies, which report language gain of an experimental group using mobile learning when compared to another control group (Thornton and Houser 2005; Lu, 2008; Kennedy and Levy; 2006). As a step forward, the current study builds on these studies and becomes predominately occupied with how learners learn using mobile phone technology by investigating the learning processes within the experimental group, rather than simply comparing their achievement with an equivalent control group.

Second, using the whole research sample (28 participants) as one experimental group and examining their interactions would enable a better opportunity to gain rich data than examining only half of the sample (about 15), when it is divided into a control and an experimental group. That is, having a larger sample size would enable the construction of two WhatsApp groups (LOTM1) and (LOTM2) rather than one. This would create more space for individuals with diverse learning styles to construct learning. In other words, a more comprehensive picture of how they interact, which strategies they use, how they overcome language problems, how they exchange feedback, how they fix errors, and how they obtain perception will be established. This would provide more insight into these processes and how learning was achieved. In addition, understanding views of a larger sample size would give a more comprehensive picture of participants' attitudes and acceptance of mobile phone learning.

Third, this study examines evidence of learning by triangulating the rich data of the larger sample size, identifying patterns, and highlighting irregularities, rather than by examining the

cause and effect relationships. In other words, the larger sample size would allow for the identification of the similarities and differences among cases and clarify justifications for participants' behaviours which enable a degree of generalisability, and thus facilitating the drawing of conclusions.

3.3 Section 2: Research Design: Design-based Research (DBR)

Design-based research is a flexible method of empirical data gathering using the qualitative methodology inspired by the Learning Sciences educational movement founded by educational researchers such as Brown and Collins in the early 1980s (Brown,1992). It seeks to further scientific understanding of learning and engages in the design and implementation of learning innovations and activities in pursuit of the improvement of instructional methodologies, conceptualised and employed in natural contexts. This enables the testing of the environmental validity of a theory or promotion of new philosophies and frameworks for instructional designs in education (Reeves, Herrington, and Oliver, 2005).

There are six fundamental characteristics of design-based research proposed by Wang and Hannafin (2005): it is grounded (in both theory and the real-world context); it is interactive; it is iterative and flexible; it is integrative; it is contextual; and above all it is pragmatic (see Table 3.4). The pragmatic characteristic of design-based research evolves from solving the problems of the real-world by designing and practicing educational interventions (solutions) as well as extending theories and refining design principles through continuous cycles of design and redesign. Most importantly, design-based research does not merely implement and test particular designs and interventions, but rather, it can contribute towards learning and teaching theories as well (Design-Based Research Collective, 2003).

The distinction between traditional research methodologies and design-based research is that interventions in the latter are more flexible and are analysed and refined by mixed methods

and theories, whereas interventions in traditional research are static and "frozen" (Design-Based Research Collective, 2003). The contrast between predictive/action research and design-based research is illustrated in Figure 3-3:

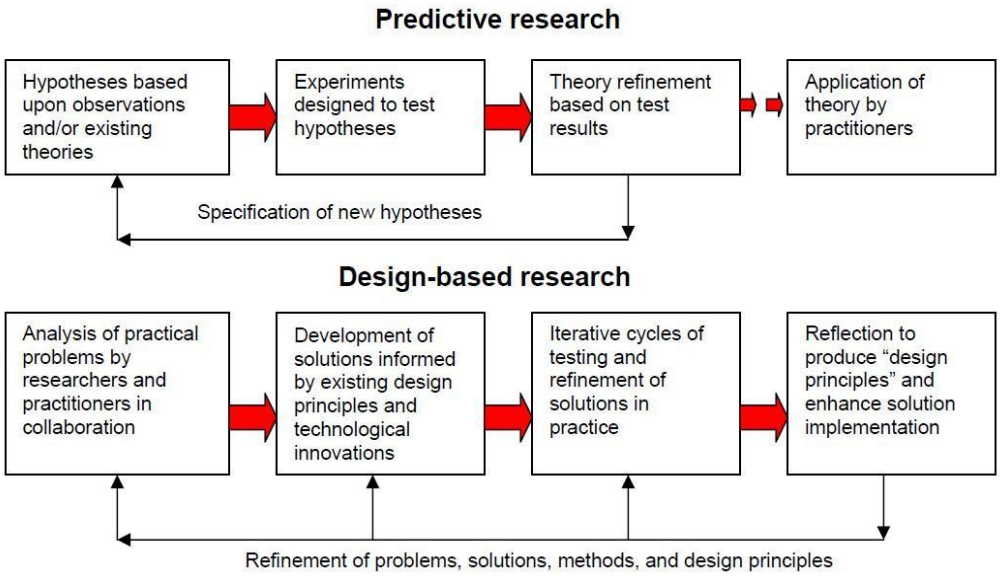


Figure 3.3 Predictive versus design-based research approaches in educational technology research (Reeves, 2006).

According to Barab and Squire (2004, p.3), the major distinction between design-based research and action research, which they categorise as psychological experimentation, is that the former "focuses on understanding the messiness of real-world practice, with context being a core part of the story and not an extraneous variable to be trivialised". This contrast is represented below:

Table 3.4 Comparing Psychological Experimentation and Design-Based Research Methods (Barab and Squire, 2004 p. 4)

Category	Psychological Experimentation	Design-Based Research
Location of research	Conducted in laboratory settings	Occurs in the buzzing, blooming confusion of real-life settings where most learning actually occurs
Complexity of variables	Frequently involves a single or a couple of dependent variables	Involves multiple dependent variables, including climate variables (e.g., collaboration among learners, available resources), outcome variables (e.g., learning of content, transfer), and system variables (e.g., dissemination, sustainability)
Focus of research	Focuses on identifying a few variables and holding them constant	Focuses on characterising the situation in all its complexity, much of which is not now *a priori*
Unfolding of procedures	Uses fixed procedures	Involves flexible design revision in which there is a tentative initial set that are revised depending on their success in practice
Amount of social interaction	Isolates learners to control interaction	Frequently involves complex social interactions with participants sharing ideas, distracting each other, and so on
Characterizing the findings	Focuses on testing hypothesis	Involves looking at multiple aspects of the design and developing a profile that characterizes the design in practice
Role of participants	Treats participants as subjects	Involves different participants in the design so as to bring their differing expertise into producing and analysing the design

Design-based research focuses on understanding real-world practice, involving multiple dependent variables and social interaction (Barab and Squire, 2004). It is conducted in collaboration with participants who are not simply treated as subjects for examination, as

would be their status in the traditional methodologies, but have input into the design and progress of the research (Wang and Hannafin, 2005). It is safe to conclude that traditional research methods are more suited to the investigation of a specific theory or paradigm, to examine how a particular tool such as a smartphone or social media platform, for example, works in a specified context or environment. The DBR, in contrast, is more exploratory, adapting a variety of theories and approaches for testing a phenomenon such as a learning condition, a joint enterprise of researchers, practitioners, and participants in the process of applying and testing the design aims and objectives to refine researcher interventions and account for a real-world setting.

The theoretical outcomes generated from design-based research can be divided into three groups (Edelson, 2002):

(i) domain theories: contextually-based, involving the interaction of students, teachers and environments
(ii) design framework: a set of guidelines for challenges which arise from the research outcomes, and
(iii) design methodologies: which relate to the implementation of interventions and generated outcomes in practice.

This study investigates the collaborative interaction impact of language learning through mobile technology and social networking - domain theorisation. It attempts to formulate design principles for mobile learning - a design framework - aiming to determine how student outcomes can be improved in Saudi higher education language learning. Amiel and Reeves, (2008) note that "educational technology is not value- or culture-free", and hence this investigation into its potential use in a hitherto traditionally restrictive environment in the changing Saudi Arabian framework. The participation of students differentiates this study from a techno-centric evaluation of the supposed benefits of new software and hardware capacities. It incorporates the interactive characteristics of its implementation,

being iterative and flexible as well as integrative; namely, contextual and pragmatic in a 'real world' practice framework (Wang and Hannafin, 2005). These are tabulated for ease of reference below in Table 3-5:

Table 3.5 Characteristics of Design-Based Research (Wang & Hannafin, 2005) and their Implications for Mobile Learning

Characteristics of design-based research	Implications for research into mobile learning
Grounded in theory and real-world context	•Theory: student-centred pedagogies/out-of-class context-aware mobile learning •Practice: student-generated content and students as co-contributors to the design
Interactive, iterative and flexible	•Teachers and students interact with and provide input for iterations of mobile learning designs •Mobile learning tasks go through analysis, design, implementation, and redesign using various pedagogies •Alterations can take place *when* and *where* necessary
Integrative	•Mixed methods are used, e.g. analysis of mobile blogs, mobile quizzes, interviews, etc. •Mobile learning is integrated with the curriculum and blended with other technologically-enhanced learning
Contextual	•The research and implementation of context are taken into account when evaluating findings •Findings and changes of initial research are documented and then connected with the mobile design and the setting •Mobile design principles are generated •Principles are subjected to ecological impact as well as collaboration (changeable)
Pragmatic	•Design-based research defines and/or refines theories and optimal practices for mobile learning •Principles are identified to improve practice

Design and practice principles are adapted through continuous cycles of design and redesign to develop applications for lesson design formulae and choices, as well as to contribute to learning and teaching theories (Design-Based Research Collective, 2003).

3.3.1 Design-based Research and Mobile Learning

Mobile learning is still a relatively new concept and does not yet rely on a specific learning theory or approach (Cheung and Hew, 2009). Learning philosophies are still emerging as the nature and scope of mobile technology expands and changes in its practical uses across a diversity of contexts (Comas-Quinn *et al.*, 2009). Moreover, this remains the case in Saudi Arabia, as teachers in particular, as well as students, are often reluctant to make the most out of mobile technologies to enhance teaching and learning (Alharbi *et al*. 2017). Furthermore, concerning the methodological reflection undertaken by this author, note has been taken of the assertion of Kukulska-Hulme (2009) that current practices of mobile learning are teacher-driven rather than based on students' experiences and beliefs. This has guided the DBR process choices for this study.

Edelson (2002) postulates a three-stage practice for DBR, involving problem analysis, design solutions, and design processes. Herrington *et al.*'s research practice in a 2009 review study on the pedagogical and research endeavours of a group of academics in higher education was predicated upon a similarly formulated three-stage programme: (i) the issue was defined and analysed in cooperation with teachers and practitioners; (ii) solutions, or interventions, were designed in accordance with theoretical frameworks and technology; and (iii) method design principles were created and based on the knowledge of theory and practice reflected on in the previous stages. Their findings were reported and translated into eleven design principles for mobile learning - a valuable basis upon which to design this study process in the Saudi EFL education framework, as illustrated in Table 3.6 below:

Table 3.6 Design Principles for Mobile Learning (Herrington et al., 2009, p.134)

Design principles for mobile learning	**Implications for mobile language learning design**
1. Real world relevance: Use mobile learning in authentic contexts	Design real world tasks that are relevant to language learners and that are connected to authentic contexts
2. Mobile contexts: Use mobile learning in contexts where learners are mobile	Design tasks that take advantage of language learners' mobility outside of class
3. Explore: Provide time for exploration of mobile technologies	Design an orientation that assists language learners to explore the potential of their mobile phones for language learning
4. Blended: Blend mobile and non-mobile technologies	Design of tasks utilises the potential of complementary technologies such as PCs
5. Whenever: Use mobile learning spontaneously	Design mobile language learning tasks that learners can access anytime. Also includes tasks that can be unanticipated and opportunistic
6. Wherever: Use mobile learning in non-traditional learning spaces	Design tasks that promote the use of mobile phones for language learning outside of class, informally and where needed
7. Whomsoever: Use mobile learning both individually and collaboratively	Design language tasks that require both individual and group work
8. Affordances: Exploit the affordances of mobile technologies	Design tasks that take advantage of mobile phone technologies and have the potential for language learning
9. Personalise: Employ the learners' own mobile devices	Design tasks that take advantage of technologies that language learners already have and/or are familiar
10. Mediation: Use mobile learning to mediate knowledge construction	Design tasks that promote the acquisition of both contextual and linguistic constructs
11. Prod*use*: Use mobile learning to produce and consume knowledge	Design meaningful tasks that enhance students' knowledge acquisition as well as enable student-generated mobile language learning content

Mobile learning usually takes place in authentic contexts that "have personal meaning and relevance, allowing deeper understandings to be achieved" (Herrington *et al.*, 2009, p.134). The consumption of knowledge is not limited by time, place, institution or lack of access to learning materials (Hsu *et al.*, 2006; Traxler, 2007). Rather, it is a shared activity, promoted by the faculties of mobile platforms whose primary purpose is to facilitate inter-connection through communication, removing the limitations of classroom based fixed technology which encourages broadly individual behaviourist learning (Beatty, 2003). However, this resume of the learning facility of social media is not intended to promote the smartphone as a panacea for all learning problems. Learners need correction and guidance in their accumulation of knowledge, and mobile devices must be viewed "primarily as a sort of reinforcement tool to stimulate motivation and strengthen engagement, and secondarily as a content-delivery tool" (Yao-Ting Sunga Kuo *et al*., 2016, p. 253). The design of this study involves learners in the planning of their education and their development, stimulating collaboration, which is monitored and managed by the researcher-teacher in accordance with the stakeholder curriculum demands. The adaptability of the DBR methodology facilitates the meeting of the aims and achieving the benefits highlighted by Harrington *et al*. (2009) as a feature of their lesson programme.

In Principle 7, Herrington et al. (2009) emphasise that both individual and collaborative learning tasks should be focused on in mobile learning. Whereas previous computer applications were meant to foster behaviourist style individual learning (Beatty, 2003), current mobile technologies can support social interaction. Hence, both individual and collaborative learning practices can now be enhanced through mobile-assisted learning. Due to students' familiarity with their own mobile devices, Herrington *et al*. (2009) recommend that students' own devices should be used in mobile learning tasks. However, different tasks may require different technological options, therefore mobile devices that meet the task needs

better than those of the students' mobiles could be provided to the students. Finally, teachers and educators engaging in a mobile learning activity should bear in mind that knowledge construction and production is a major objective of that activity. This is particularly important in student-centred language learning since students are expected to acquire and construct linguistic knowledge and collaborate when doing so.

3.3.2 Theoretical Foundations

The Literature Review chapter indicates that EFL learning research projects have tended to focus on technological developments and how they can be used, rather than the more student-centred, out-of-class mobile learning approaches that incorporate collaboration and interaction, along with learner input into the lesson design. Studies suggest the need for more systematic, contextualised, rigorous and theory-driven approaches to mobile language learning design in areas which in fact have not been sufficiently explored or theorised upon (Cheung and Hew, 2009), hence the deployment of DBR in this research context of EFL learning in Saudi Arabia. Kukulska-Hulme and Viberg (2018 p.215), in their recent review of mobile collaborative language learning studies, state that learners should be "seen as co-designers of mobile collaborative language learning activities in education. However, it should not be assumed that learners know how to use their mobile devices effectively for educational purposes."

The following sections reflect on the methodology and will examine the philosophical foundations of DBR and its implications for mobile learning, seeking the rationale for a reliable and theoretically-based research project.

3.3.3 Instructional Design Principles

A preliminary factor in the process of development of the study design is 'instructional design', which involves the use of "a technology which incorporates known and verified

learning strategies into instructional experiences which make the acquisition of knowledge and skill more efficient, effective, and appealing" (Merrill *et al.*, 1996, p.2). Instructional design is based on determining the current state of the educational context, its problems and the needs of the students, defining the goal of instruction, and creating an intervention to assist in the transition and to help to overcome learning problems (Merrill *et al.*, 1996). It assists in developing a learning approach or strategy that can help to guide the implementation of an intervention, presented as criteria of specific learning conditions and outcomes (Herrington *et al* .2009).

Jonassen (1994), cited in Herrington *et al.* (2009, p.35), claims that knowledge construction is enhanced by learning environments that, inter alia: (i) provide multiple representations of reality in a substantive context, avoiding oversimplification of issues and problems; (ii) focus on knowledge construction rather than simple reproduction, using authentic tasks instead of abstract knowledge presentation; (iii) support collaboration through non-competitive social negotiation; and (iv) foster reflection on what is learned and gained. There have been some models that can assist in both the explanation of current learning situations and the implementation of learning interventions, or design principles, by means of analysis, design, development, implementation, and evaluation. Design-based research is one of the most effective models that can guide these instructional and methodological processes (Anderson and Shattuck, 2012; Zheng, 2015).

3.4 Data Collection

The methods of data gathering and assessment are directed at meeting the aims of this study and its value as an education tool, complementary to more traditional methods of learning. Language teaching and learning constitutes a specific profession in its own right; an essential part of the overall education structure in Saudi Arabia, and is only improvable when subject to critical examination. The teaching and learning of English as a Foreign Language (EFL) is

a particularly important discipline in the Kingdom given that it is the language of business in the region and a fundamental basis for student development in commerce, and social and political development. It is thus important to gain a deeper understanding of the use educational tools, particularly mobile smartphone applications accessible at any time or place, for language enhancement and independent learning.

There are anticipated difficulties to be surmounted in the pursuit of value assessment, which necessitates the use of different, complementary methodologies and methods of examination. These largely stem from the nature of the students themselves, their individual personalities and motivations, as well, in the case study location of Saudi Arabia, and cultural limitations on access to the student body.

Having considered the philosophy of the study and the practical usefulness of methods of information collection, much reflection and research was undertaken to explore software assistance to support the analysis of the data accumulated. The choice was made to use proprietary software, namely the IBM software technology, Statistical Package for the Social Sciences (SPSS) for Windows, which is commonly used for data examination, the correlation of statistics, its descriptive capacity and the fact that it contains reliability checks, (George and Mallery, 2016).

This process of analysis was complemented by using Nvivo to organise the data in the qualitative method tools – focus groups and interviews. It is described by its developer as "*the most powerful software for gaining richer insights from qualitative and mixed-methods data*" and it proved to be of considerable value in enable a visual understanding of the results (Welsh, 2002). The capacities of both software packages proved of further assistance in facilitating triangulation of the results obtained from different techniques of data gathering.

3.5 Pilot Study

During the process of determining the detailed aims and philosophy of the study, it was considered important to the efficacy of the process to conduct a broad review of the subject and the available methods of information collection and data analysis. Mackey and Gass (2005) suggest that a small-scale trial of proposed procedures is important to "*assessing the feasibility and usefulness of the data collection methods and making any necessary revisions before they are used with the research participants.*" (p. 43). This essentially involved conducting an exploratory pilot study which involved: (i) evaluating the similarity of experience and status of the participant students and teachers; (ii) appraising the students of their role in the study design; (iii) explaining the research instruments; (iv) the gathering of performance feedback on operation of the methods and results of the testing; and (v) reflective revision of research procedures, methods and instruments (Thomas, 2017).

3.5.1 Pilot Questionnaire

In preparation for the research investigation, a quantitative method-based questionnaire was distributed to the body of L2 EFL students at Imam University. This enabled a sampling of the larger data set to identify a level of statistical significance for the results and provide a basis for any generalisations which would guide the information and results process (Newman and Benz, 1998; Quinlan and Zikmund, 2015). This pilot was conducted with a sample of students (n=30), selected randomly by the student affairs office in late December 2017. Online surveys utilising Survey Monkey were administered in the classroom. The researcher visited all classes and wrote the link to the relevant site page on the white board which the students then typed in their smartphones to direct them to the online questionnaire.

The conducting of the pilot study helped to identify any potential problems in data gathering and processing that would affect the validity, consistency and reliability of the results of the

main part of the investigation (Mackey and Gass, 2005, p.45). This includes, for example, consideration of the nature and format of the questions asked of participants so as to focus the second phase of the study more effectively on meeting the objectives. The time spent on reflection and planning proved invaluable, although there was little which required any major change for the main study.

During the pilot questionnaire completion stage, clarification of the questions was given in class including the meaning of terms; for example, a student asked what was meant by 'mobile devices', and others were asked if they knew, with four more indicating confusion. The questionnaire was drafted in both Arabic and English, simply because the students were in the first year of academic learning; this, somewhat encouragingly, gave rise to the clarification questions as some of them matched their Arabic understanding to the English translation. The term, 'mobile devices', was subsequently changed to 'smartphone' upon confirmation that all knew what was being described. It was this kind of clarity which guided the vocabulary learning tests subsequently undertaken following assessment of the pilot results of the questionnaires, aided by the clarification of queries in class.

This description of the pilot study shows how it has assisted in guiding the conducting of the main research. The feedback from participants to the questionnaire items was consistent and clear. It showed the importance of including an exploration of the potential of using mobile social media applications in the design of the main study questionnaire to gain a broader image of how Saudi students perceive and exploit social media for learning.

3.5.2 Pilot Focus Group

The purpose of the pilot focus group was to evaluate the appropriateness of the questions asked and provide the researcher with experience of conducting focus group interviews, including answering respondents and managing the digital software recording device. The

pilot focus group was conducted with six volunteer students at the same level and faculty that the main study would be conducted. The pilot resulted in changes to some questions by altering and amending some words to avoid ambiguity, and some grammatical and sequencing changes according to the themes presented in the study.

3.5.3 Pilot Interviews

The purpose of the pilot semi-structured interview was to evaluate the appropriateness of questions asked and provide the research with interview skills in asking questions, answering respondents and managing the digital software of recording device. The pilot semi-structured interview was conducted with a three students at the faculty where the study was conducted. This resulted changes in interview questions grammatically and sequencing according to the themes presented in the study.

3.6 Main Study: Design and Procedure

This section introduces the strategy used in the research design cycles of this study, which involved using qualitative data tools (Yin, 2011) and a focus group following the completion of a pre-investigation questionnaire, as using multiple sources of data collection improves the reliability and consistency of the conclusions and findings obtained (Saunders *et al*., 2015).

The empirical study was carried out at Al-Imam University, Riyadh, Saudi Arabia in January 2019 and was completed within a four-month semester period. It was conducted by way of the delivery of lessons that incorporated collaborative mobile phone social media-based activities and tasks as part of an adapted, design-based curriculum teaching process. From L2 classes on the male and female campuses of the university, 14 male and female students were randomly chosen taking into consideration the basic competences of the students as gleaned from the pre-study questionnaire.

A design-based research approach was employed to investigate students' current experiences and perceptions of learning English and to better understand their attitudes towards learning the language. In the gathering of preliminary expressions of experiences of learning English inside and outside of the university, an insight was gained into the development of new mobile, social media-based approaches to learning, aiding reflection on the data gathering methods most pertinent to meeting the aims and objectives of the study. Qualitative research methods and tools were utilised in the DBR to test and redesign pre-existing principles of teaching and learning and explore new ideas on the presentation of curriculum-based learning, in a more student-centric manner, using mobile technology. The data collection procedure was conducted in several stages:

(i) the pre-study questionnaire stage, followed by focus group interviews to ensure the participants were familiar with their obligations to the research,
(ii) during the mobile language learning task, called the 'during-learning task', which included focus group meetings and interviews to reflect on further study development, and
(iii) during the 'post-learning' procedure, which was essentially a de-briefing on the study issues using focus group interviews.

3.6.1 The Pre-Task Questionnaire

The purpose of the pre-study questionnaire was to elicit information in order to be able to carry out statistical measurements that would complement the qualitative findings collected in the pre-study focus group, and to study significant differences in participants' responses. A questionnaire was presented to the target classes for completion prior to the focus group with students who would be involved in the empirical, design-based research study to investigate broad usage of the young adult L2 learners of smartphones and social media. Gu (2016) asserts that whilst the data gained from questionnaires is 'insightful and satisfying' as it highlights differences in attitudes and similarities in patterns which guide recommendations

for teaching and learning, they tend to be 'exploratory and shallow'. The purpose of this study was to seek an overview of the familiarity of the broad EFL L2 student base with mobile phone possession and technology, and access to social media by Saudi learners in gender separated classes of approximately 28 students per set. From each of the male and female classes, each group of 14 was prepared for the focus group phase of the empirical research. The questionnaire survey ensured the required familiarity and competence in the use of the tools which facilitated the exploration of the value of mobile social media access to language learning.

Concerning the use of the questionnaire, it was decided that it would be helpful given that its primary purpose is that it could be kept simple, and it allowed a relatively short contextual examination of the subject to avoid unnecessary complexity, avoid researcher bias and avoid the canvassing of in-depth opinions at such an early stage in the research (Adams and Cox, 2008, p.24). The questions were based, as far as possible, on the traditional Saudi Arabian social and educational context. This is situated in a relatively unique political and socio-economic context of the Islamic faith, with expectations of and restrictions on personal behaviour, not least the segregation of the sexes and the regulation of inter-gender conduct and communication (Alfalih, 2016).

As an integral part of the preparation process, a review was undertaken of questionnaires used in prior studies and their adaptability to the Saudi HE context. An OECD 'International Generic Version' survey (2004), in common with the majority of other such internationally based enquiry processes, focused largely on teacher information rather than the student perceptions integral to this study design. Feri *et al*. (2017) provide valuable insights and ideas for reflection in the preparation of a culturally sensitive EFL questionnaire on student attitudes to learning. Their questionnaire format for examining Iranian student attitudes to

EFL was, however, quantitative in nature, and aimed at measuring attitudes as the primary foundation of their research (Feri *et al*., 2017, p.163); however, this is not the focus of this design-based project, as the questionnaire served as a review of digital knowledge and the use and evaluation of traditional Saudi classroom pedagogy and learning. Even so, it influenced the choice of questions and instruments used in this questionnaire, which were altered based on discussions with experienced colleagues in the UK and KSA, and the researcher's supervisors. The enquiries are specifically tailored to the Saudi University context with which the researcher is wholly familiar as an EFL lecturer, with some open questions to allow students to expand on their experiences.

The questionnaire contains five parts:

(i) General information on familiarity with social media (8 items);

(ii) Likert Scale questions regarding attitudes towards and perceptions of mobile phones and social media (15 items);

(iii) Multiple Choice questions on motivation (5 items), and desire to learn (3 items);

(iv) Further information (4 items);

(v) Open-ended questions (5 items).

The five open-ended questions at the end of the questionnaire were intended to give the subjects the opportunity to add further information on attitudes towards traditional methods of teaching, and the reasons for these attitudes.

The questionnaire was prepared in both English and Arabic to ensure participant understanding and the validity of the findings on technical competence (Sekaran and Bougie, 2010). The translation from Arabic to English was carried out by the researcher, an EFL teacher, and then checked for quality and accuracy by Arabic doctoral colleagues who

graduated in the UK in linguistics. to avoid any mistakes which would have compromised the process (Sperber, 2004).

3.6.2 Focus Group

A focus group discussion is a common qualitative research technique used among academic researchers in the health and social sciences (Wilkinson, 2004). Simply put, a focus group is an informal discussion among a group of selected individuals focusing on a particular topic (Wilkinson, 2004). The primary aim of a focus group is to describe and understand meanings and interpretations of a select group of people to gain an understanding of a specific issue from the perspective of the participants in the group (Liamputtong 2011). A focus group typically consists of a small number of participants, usually around six to eight, who come from similar social and cultural backgrounds or who have similar experiences or concerns. Based on this, the participants in this research have been selected on the basis that they would have something to say about the topic and would be comfortable talking with the researcher and each other.

The use of focus group interviews in this qualitative process was to enable participants to "speak in their own voice and express their own thoughts and feelings" (Berg, 2007, p.96). The interviews were conducted in a focus group setting, as well as individually when requested by the participants to allow for the free expression of views without influence from the group and when determined appropriate by the researcher. Denscombe (2007) argues that interviews provide flexible adjustment to the level of enquiry, which is vital to the operation of DBR, especially in the context of focus group interview feedback on case study activities and tasks, as this serves to promote a deeper understanding of group members' experiences (Tracy *et al*. 2006). Cohen *et al*. (2011) claim that focus group interviews promote research orientation into a particular field of investigation whilst developing themes and topics to

generate hypotheses derived from group insights and data through the gathering and evaluation of feedback.

After considering the questionnaire answers and ascertaining the students' familiarity and competence with mobile and social media technology, it was possible to select, at random, focus group participants for the main empirical research project. A focus group is defined as a small gathering of people with a broad interest in the subject being studied or examined, meeting to share ideas, experiences and attitudes on that topic (Kreuger and Casey, 2000). Williams and Katz (2001, p.4) assert that focus groups can "generate rich data that can facilitate decision-making and provide useful information for the development, evaluation, and modification of curriculum, learning tools, and programs", and that they are particularly valuable for developing new learning tools and evaluating knowledge and perceptions on curriculum issues. The emphasis is on the creation of ideas for future learning practices and activities in a social context rather than simply investigating individual experiences (Breen, 2006).

In this study, students were invited by the moderator-researcher to discuss their views on social media as an education tool in a familiar classroom environment. The participants were made aware that the meeting was not a 'social gathering' but for the purpose of:

(i) sharing knowledge on a subject the participants know about,
(ii) facilitating interaction between those involved, who were in any case from the same L2 class,
(iii) facilitated by the moderator-researcher to guide the flow of the discussion (Denscombe, 2003, p.178)

It is "a small gathering of individuals who have a common interest or characteristic" (Williams and Katz 2001), particularly apt for observation and data gathering in an education context to generate 'synergy, snowballing, stimulation, and spontaneity'.

This process of allowing interviews added to the DBR programme as it was possible to clarify issues which may have arisen in the course of the case study activities, which the respondent-participants may have been nervous or shy of disclosing during focus group meetings. It was intended to supplement the feedback of the group rather than be used as a primary basis of data gathering (Potter and Hepburn, 2005). Questions were pre-prepared to seek opinions and views without leading responses, and the student participants were left to answer freely, be it 'letting off steam' or addressing issues from involvement in the activities, as far as possible without prompting (Adams and Cox, 2008, p.23).

In this study, the focus group interviews were structured to check previous findings as the variety of case study tasks progressed; participant feedback was sought on testing, and on ways to refine and redesign the learning approaches to clarify concepts about conduct and perceptions of the students. All the focus group interviews were conducted in Arabic, so that students who only possessed an intermediate level of English had the chance to express their ideas and opinions effectively. An important point here to capitalise on is that the interaction between the participants in the focus group helped them get more familiar with the situation of using English in higher education. Some of the participants started talking about their knowledge with the situation at other universities. Additionally, some students pointed to some solutions to the emerging problems, hence the students were getting more knowledge about the subject under discussion. The discussion reveals how interaction between students is important and how one gets familiar with issues he/she was not previously aware of. Furthermore, running the focus groups equipped me with the skill to conduct the conversations and ensure turn-taking. Such a skill is important for one's interpersonal skills which are in turn key to any university lecturer, dealing directly with the students.

However, focus groups are not without criticism (Liamputtong 2011). For example, some research topics are not suitable for open discussion, such as personal issues. Furthermore, group members may not participate actively in the discussion, or one or two participants may dominate the conversation, and in such a situation, group members may simply conform to the prevailing ideas put forward by the group.

3.6.3 Interviews

It was necessary to use interviews to delve deeper into some of the responses provided by participants. Interviews provide insight and perspectives that allow the researcher to meet the research objectives, while providing critical information which may not be attainable through other quantitative methods (Cohen, Manion & Morrison, 2007) and therefore this further contributes to the mixed method approach chosen for this study. However, this classification of interviews as primarily qualitative is not without flaws, as interviews tend to include researcher bias (Silverman, 2010) and therefore the mixed methods approach of complementing interviews with other forms of quantitative data is intrinsically useful.

In addition to the link between iterviews and questionnaires, it is also important to note how the theories behind the nature of the interview become essential for this research study. In previous research, Yin (2006) alludes to the benefits of the face-to- face interview where participants can be more easily observed and non-verbal communication can come into play. While Yin (2006) acknowledges that interviews are typically seen as ‘verbal reports’ and can have limitations surrounding poor recall or inaccurate articulation, there is a pressing need within this study to gain a better overall perspective of participants’ experiences. Pairing this type of interview strategy with the more quantitative type of data obtained in the questionnaires and the tests should provide a clearer perspective on the nature of learning vocabulary through a specific design.

3.6.3.1 Interview Instrumentation

In the post-study task, semi-structured, student-researcher interviews were conducted with a number of research participants in both iterations (see Appendix 1 for interview questions). Interviewees used Arabic while being interviewed, after which I transcribed and translated their recordings. In the main study, I interviewed 12 participants, six of each class, representing all patterns identified in research samples including irregular cases who showed discrepancy in their beliefs and behaviours, like those who showed infrequent online contributions while having high vocabulary gain and vice versa (Lu, 2008). Interviewees used English during discussions and tended to code switch when they had a language gap. Voice recordings of the interviews were transcribed after completing the interviews. The average length of each interview was 15 to 20 minutes and the total interview data is 3 hours and 50 minutes. The purpose of these interviews was to gather subjects' spontaneous ideas about their impression of their experience with m-learning, their acceptance of mobile phones as a learning tools, the affordances of mobile phones which could benefit learning, the drawbacks of mobile learning, and the expected challenges of official mobile learning integration with classroom learning. It was also used to determine how participants dealt with the target words, how they learned them, and whether they preferred traditional study modes. Findings from the interviews were triangulated with the corresponding findings from the questionnaire, the focus group. NVivo is used to analyse interviews with the 12 participants. The full script of each participant's interview is used as a separate resource and entered in NVivo.

3.7 Research strategy: Case Study – Collaborative Tasks and Activities

A case study is a common tool used in the collection of qualitative data in education-based studies. It is a distinct form of empirical inquiry that attempts to investigate issues and phenomena in their real-life context through the expression of views and opinions and perspectives that are freely shared; they are particularly of value to reflect on the

establishment of boundaries in subsequent studies (Yin, 2013). Johnson and Onwuegbuzie (2004) argue that the case study contributes to knowledge of political, social, organisational and individual phenomena, ascertaining meaningful and holistic characteristics of real-life events. The case study approach in this research was based on group tasks and activities, whereby the author would provide real-life scenarios to challenge the language learning of the participants, with feedback used to develop the specific task and its continuation or guide the preparation of the next activity.

Over the four-month duration of the DBR programme, numerous case study tasks and activities were set as part of the teaching and learning process. The use of multiple case studies enables researchers to identify variations across learning activities, facilitates cross-referencing and the 'checking' of issues and findings as they arise in performance or feedback (Herriott and Firestone, 1983). This was deemed by the author as a way providing more effective insights into the progress of collaborative mobile learning in a continuing educational context, as well as producing data which would be more easily replicable in further studies.

Gable (1994) and Eisenhardt (1989) argue that several case study activities should be undertaken, at the discretion and judgement of the researcher, as this supports an educational programme where progress is reflected in student motivation, capability and collaboration. Such planning decisions are based on the expected outcomes of the study and data to be obtained, taking account of the practicalities associated with lesson organisation (Dyer and Wilkins, 1991). In this study of the emerging and much under-researched phenomenon of student-centric learning via social media platforms in Saudi Arabia, a rich exploratory approach is most suitable in the collection of data to enable the inductive formulation of learning theory. The perceived value of social media mobile applications in HE language learning enabled the ascertaining of "why", "how", and "what" works or does not in its use.

The data gained has been evaluated to ascertain whether the theory on the social media learning phenomenon can be developed and tested - an inductive approach which involved a deductive examination of the application of existing theories which claim to apply to the context. Connectivism, developed by Siemens (2005) as a separate learning theory, has thus been examined concerning the background of mobile learning.

Stake (1994) emphasises the need to design the study in order to optimise understanding of the case. Furthermore, this current study does not seek to generalise beyond the case being examined, as it is looking at the potential of using mobile social media applications. A common criticism that concerns case study is this issue of generalisation, yet generalisation is not the object of this study, as the sample used is too small in proportion to the whole teaching population in Saudi Arabia. Some expert authors on research methods, such as Robson (2002) and Yin (2009) suggest case study can provide analytic generalisations. In this process, the idea is that case study research has the ability to contribute to the expansion and generalisations of theory, which can help researchers understand other phenomena or situations, such as contextual learning, student collaboration, connectivism and mobile learning.

3.7.1 Observations in the Course of the Study-Task Activities

Observations provide a flexible, diverse and explanatory source of data which need not be structured around a hypothesis, and, in a DBR project, aid the understanding of a concept or phenomenon upon which to build theory (Brown, 2012). Observations allow practitioners and researchers to explore aspects that are uncovered or missed by other qualitative processes, and to recognise the value of issues that the participants may be reticent to discuss in interviews, questionnaires or focus groups (Cohen *et al.*, 2011). They can arise and be noted from natural and virtual settings - in this DBR, through the case study tasks and by monitoring participant behaviour, interactions, level of communication and collaboration and

the location of activities (Gay *et al*., 2006; Nah, 2008). In a study such as this, issues of time and location preference are integral to the effective development design of a mobile learning project. For example, Nah (2008), in his PhD project, observed participants' interactions via a mobile discussion board in order to measure its effectiveness in maintaining student-centred and collaborative language learning. Importantly, the current study has utilised the mobile discussion board observation scheme, developed by Nah (2008) (see Appendix F.) along with other scholars, in which observations of interactions and content types are noted. The times that students preferred to either access or contribute to WhatsApp were added to the scheme. Location preferences are revealed by the interview data. Time and location preferences are important for the effective design of a mobile learning project. Student-student and student-teacher interactions were monitored, and the numbers and types of comments were recorded. The researcher frequently monitored students' WhatsApp interactions using an iPhone or laptop, responding and commenting where relevant or useful. Notes were sometimes taken using the iPhone through screenshots after observing students' interactions.

3.7.2 In-class Activities

The attendance application was used to maintain attendance records and to track students' progress during the semester. It was also used, with the consent of the participant-students, to email or SMS individual students or the entire group, especially those who were missing on a given day. Each student profile had a field for storing additional information. Stored reports and progress information were saved in CSV spreadsheet format for further analysis, the students having been advised of this feature, given their consent, and reassured of the same level of data protection and confidentiality.

3.7.3 Note Taking

When different phenomena were observed during in-class activities, the researcher found it convenient to take notes on his iPhone to aid recall, pertinent to the observation process

outlined below as part of the data collection process of the DBR. In the sessions of teaching and task performance, and the monitoring of uploads and learner progress, students were advised of this activity, their consent sought and given, with an assurance that these notes would only be viewed or listened to by the researcher and only used in the thesis. Although the iPhone is an effective and immediate data collection tool, this strategy proved to be confusing and distracting for some students and so notes taken on the iPhone were usually short and symbolic, later synchronised to an iPad where more detailed and organised notes were developed. The students preferred this practice and accepted the confidentiality promises made.

3.7.4 Stimulated Recall

The last qualitative data collection method employed in this study involved student uploads as evidential participation in the social media tasks as a stimulus for recall. Stimulated recall, particularly in second language learning, is used to explore learners' thought processes or strategies at the time of an activity or a task, by asking the learner for the rationale for using those strategies (Gass and Mackey, 2000). Stimulated Reflection (SR) is a pedagogical approach utilised by Levy and Kennedy (2004) to support the monitoring of the on-going language learning process. The audio-video and text-based contributions in their research were recorded in order to allow students to reflect on them through interactions with the teacher and feedback on their thoughts and perceptions. The teacher's role was to assist them to evaluate their own work, bring points to their attention, ask questions, and then work toward improving their language via clarification, explanations, and/or confirmation. They would identify any strengths that could be enhanced or weaknesses that needed to be improved.

This stimulated recall approach was used in this study as the language students were familiar with interactive social networking through mobile Instagram for out-of-class learning, and

because it facilitated contextually-based opportunities for them to have input into further iterations of the learning design. Stimulated recall activities involved prompts of the preceding Instagram interaction to help the students recall and then justify their Instagram and WhatsApp participation. Screen-captured Instagram discussions and WhatsApp notes were shown as stimuli to students participating in the sessions, which took place in-class using the iPad and feedback recorded via iPhone.

In a process similar to the analysis of Instagram interactions, data obtained from stimulated recall sessions were analysed using NVivo. All stimulated recall sessions were conducted in Arabic to ensure the results were accurately recorded in their native language and to avoid misunderstanding. The learner contributions to this part of the DBR programme were recorded in a focus group feedback interview as soon as practicable after upload to avoid the risk of inaccuracy in thinking which could potentially arise between occurrence and recall sessions (Calderhead, 1981).

3.8 Validity and Reliability of the Methods

Validity is the degree to which a study actually measures what it purports to determine, and whether "the truth" is accurately identified and described (McDermott, 2011). It is supported, so far as is possible, by the use of specifically prescribed and well-entrenched procedures and strategies, and this further explains the methodological choices made for this study (McDermott, 2002). Furthermore, it is possible to avoid the need for justification of more novel, experimental methodological approaches, by ensuring the academic acceptance of the reliability of the process as established practice (Bashir *et al.*, 2008). This can include dependability, consistency over time, and the repeatability of a study's data collection, interpretation, and analysis (Joppe, 2000). It is not the purpose of this study to introduce a discussion on the validity of novel methods, but to use established ways of data gathering and analysing results. This is explained in detail in the following sections. The realisation of

validity and reliability requires reflection, not simply on the practicality of the methods and techniques, but inherent features which may devalue the quality of the research, such as unchecked bias (Ofir *et al.*, 2016). This can only be accomplished by the researcher reflecting on the nature of the methods and questions, to ensure objectivity, so far as is possible in a 'value-laden' project context.

The Saudi Arabian context of the study means that all changes in education practices are imbued with cultural considerations, and this is the case herein, most obviously with the fact that this researcher was attempting to conduct the DBR experiments with both genders. Academic freedom, which continues to be failed to be acknowledged by Western practitioners, is not as available in the Saudi faith-based framework; this may be changing, but at the time of this study it is not such an open field for research. In the choice of methods for this research, opportunities are opened up for the basis of further studies, using accepted and approved methods, in such a traditional context. In terms of validity, the results arising from the process can be considered in the broader context of mobile social media application use and value, as has indeed been promoted and critiqued by other researchers.

These issues have been deliberated upon in the discussion of the methodology and techniques herein, examining potential flaws in the quest for trustworthiness, summarised by Punch (2014) as credibility, transferability, dependability, and conformability. Whilst different approaches have been used in this study, they are predicated on traditionally respected and utilised techniques, accompanied by a high degree of testing, implementation and professional reflection. It is submitted that any reliability faults in the process which may be identified by readers and academics do not detract from the overall validity of the research.

3.9 Data Analysis

3.9.1 Quantitative data (SPSS)

Quantitative data (questionnaires) for this project is analysed by SPSS 24 (Statistical Packages for the Social Sciences). SPSS is a popular choice for researchers in the social sciences because the framework and interface are relatively self-explanatory and there are multiple online tutorials if assistance is required (Yin, 2011). Firstly, quantitative data was entered and saved in a Microsoft (MS) Excel® 2013 format, and then into an SPSS file format. Both files were kept secured and both files were utilized throughout the data analysis process. All the variables were coded in order to identify them (e.g. by section and then item) and the measure (ordinal or nominal) added. Data collected through SPSS were kept in a file with a computer password for security, which is ethically and morally important for this research.

3.9.2 Qualitative data analysis

3.9.2.1 Data analysis approach: Thematic approach as a guide for the procedure of qualitative data analysis

Bogdan and Biklen (1998, p.21) define qualitative data analysis as *"*working with data, organising it, breaking it into manageable units, searching for patterns, discovering what is important and what is to be learned and deciding what you will tell others". For qualitative data analysis, Braun and Clarke (2006) use the thematic analysis method "for identifying, analysing, and reporting patterns (themes) within data" as they found it to be a useful and flexible method for qualitative research in and beyond psychology (p. 6).

Braun & Clarke, (2006) propose a step-by-step, yet flexible guide which contains six phases that start from preparing data to reporting findings. Phase 1, as they show, is concerned with "data familiarisation". This includes data transcription, reading and rereading in order to become immersed in with the data as much as possible. It is, also, possible to take notes on

initial ideas. This phase also comprises, as they explain, transcription of verbal data which requires transforming verbal data into rigorous verbatim transcripts. While considered boring and time consuming, they assert that it is an excellent way for a researcher to become familiar with the data. Phase 2, in this guide, is called "generating initial codes" in which an analyst produces codes or a list of interesting ideas in collected data. The process of coding also involves organizing data into meaningful groups. Phase 3 is "searching for themes" which entails sorting the previously identified codes into broader themes and putting all the relevant coded data extracts under the identified themes. Also, in this phase unwanted codes might be removed. Phase 4, which is named "reviewing themes" concerns the refinement of devised themes and to do this, the coded extracts should be reviewed to ensure that they fit into their themes. Also, the relationship between the themes and relevant codes need to be re-checked to ensure that they reflect the meaning of the data they hold. In turn, some themes might be merged or other themes might be split into more themes. Phase 5, "defining and naming themes" is concerned with defining and further refining the themes to identify the essence of each theme and to know exactly what it is about, and then to determine what type of data each theme should capture. Finally, phase 6 involves "producing a report" that tells the complicated story of data in an interesting and coherent way.

Focus groups and in the case study process was carried out using a technique known as 'content analysis'. This, suggests Elo and Kyngäs (2008), supports both deductive and inductive analysis through phases of (i) preparation, (ii) arranging and reporting, and (iii) the presentation of findings and results.

All interviews with the participants in the study were recorded with the permission of the interviewees and subsequently transcribed (Opie 2004), before using the qualitative data analysis software NVivo. Indeed, in the post-case study task and observational analysis process, where considered advantageous, student text-based posts and comments as well as

multimedia threads, were examined and classified using the software, which highlighted findings on the impact of Instagram and WhatsApp to learning collaboration.

Thematic analysis was used to identify categories and place the data into a correlation of collected views to aid understanding of the principal findings (Mason 2002). In the coding process, each new participant and thematic code was given a new index card with a reference, and then grouped together, to form a thematic summary of frequently raised issues and perspectives (Maykut and Morehouse, 1994). This facilitated a descriptive analysis of the data themes, identification of connections and links, and underpinned any similarities or differences among the male and female students. The male and female students' responses were juxtaposed and compared to ascertain any contradiction or agreement with regard to gender perspectives on the value of social media-based learning to enable an understanding of the viability of its introduction into the Saudi educational framework.

The aims of the data coding aims were to identify patterns which could be classified into common themes based on: (a) the attitudes towards use of mobile phones and mobile social media applications; and (b) learning theories, and how students engage with and accumulate knowledge using social media platforms. These were then broken down into the sub-themes which became apparent from the principal subject categories. This data analysis procedure, derives from Song and Fox (2008) and helped them to identify and classify contrasting usage patterns in the context of different learning styles to determine impacts on learning.

3.9.3 Triangulation

Triangulation is a technique used by researchers to cross-reference results in order to ascertain links and relationships in the data which are not immediately identifiable in their individual categorisations, increasing insight, reliability and validity (Shulman, 1994; Flick, 2014). Denzin (1978) has identified four basic types of triangulation, namely:

(i) **Data Triangulation**, where information from several sources is cross-linked;

(ii) **Investigator Triangulation**, suitable where results are correlated from several different researchers in the same investigation;

(iii) **Theory Triangulation**, using multiple theoretical perspectives to interpret a single data set; and

(iv) **Methodology Triangulation**, where multiple methodological philosophies are used to study a particular problem.

This research, in its data analysis process, has utilised multiple data sources, and theoretical perspectives and methodologies in its exploration of the mobile social media learning phenomenon, using what Tashakkori and Teddlie (1998) call "multilevel research" at key, relevant stages of the study (p.19).

3.10 Summary of Data Collection

The data collection instruments and the rationale for these at each stage of the study are outlined in Table 3.7 below:

Table 3.7 Outline of Research Instruments

Order	Method	Variables	Rationale
1.	*Before learning task:* •Pre-task questionnaire and focus group/ interviews	•Patterns of mobile phone use •Language and technology backgrounds and preferences •Previous experience with EFL •Difficulties with EFL learning and technology	•Obtain information about participants' skills to maintain an accurate progress evaluation afterwards •Collaboration with students to inform the design
2.	*During learning task:* •SM observation •Analysis of SM applications discussion •Stimulated	•Participants' mobile communication and responses •Participants' feedback and reflections on mobile language learning •Effectiveness of the design in enhancing student-centred and out	•To examine the effectiveness of learning tasks through the use of Instagram/WhatsApp applications on mobile phones •To maintain an adaptive student-generated learning resources •To ensure a connection

	recall	of-class contextual mobile language learning •Effectiveness of use of mobile Instagram/WhatsApp	between mobile medium and contexts •To ensure connection between in-class and out of-class learning activities
3.	*After learning task:* •Post-task focus/interviews group/ interviews	•Participants' perceptions of their use of Instagram/WhatsApp applications on their mobile phones •Evaluation of the impact of participants' feedback on adapting the learning materials •The impact of mobile learning on collaboration, context awareness, and language use of participants • Recommendations for the improvement and design of future mobile tasks	•The opportunity to clarify concepts about the learning task •Identifying advantages and disadvantages of mobile Instagram/WhatsApp applications in language learning •Informing the design of mobile language learning

3.10.1.1 Mobile Devices Used in the Data Collection

It is suggested that when the teacher-researcher shows proficiency and enthusiasm in using their own mobile device in the course of a DBR project, the participant students will follow and be more motivated to use their mobile phones for learning. The researcher also found it simpler to use his iPhone and iPad for in-class activities instead of paper notes or additional devices such as a digital recorder or laptop. They proved, through regular operation, to be more user-friendly and to support a wide variety of applications for work, as noted in Table 3-8 below:

Table 3.8 Summary of the mobile applications used in each stage of the study

Device	Application	Description
iPhone 3GS	Voice Memos	A standard iPhone application that is used to make quick, short and long recordings. After the recording is completed, files are automatically saved as Voice Memos and filed by the dates they were recorded. Files can be uploaded to a computer via iTunes.
	Notes	A standard iPhone application that allows the user to type short text documents and save them as list notes. The main screen of the application shows when each note was saved and/or edited. Notes can be synchronised to another device or email account, such as Gmail.
	Attendance	An application that allows the taking and keeping of daily attendance records for each class/group and each individual student. Through Attendance, a teacher can email an entire group, email/SMS students who were missing on a given day and send records to individual students. Records can be saved and/or emailed in a CSV spreadsheet format.
	Instagram/ WhatsApp	A mobile application used to access Instagram. Added to standard features of the Instagram website e.g. chatting, messaging, etc, the application supports instant photo capture and uploading via the iPhone camera, and the ability to find and share locations.
iPad	Instagram/WhatsApp	An application especially designed for the iPad. It mainly provides full screen display of photos and feeds, easy photo downloads, customisable colours and fonts, and easy switching between multiple accounts.
	Pages	A word processor application designed for different platforms including the iPad. A user can create, edit, and share documents either by typing on the multi-touch iPad screen or via a wireless keyboard.

It was also important to this author and his teaching practices to explore the potential of mobile devices as data collection tools, as well as their potential as learning tools, especially with the broad availability of wireless internet and 3G networks at all research sites. Synchronisation between the iPhone and iPad also proved fast, effective and simple to manage for the purposes outlined and the collection of data. The iPhone was used as: (i) a digital recorder to record focus group interviews; (ii) an observation tool to oversee student threads and interactions over Instagram/WhatsApp and to respond where necessary; (iii) a

means of monitoring attendance and student follow-up to aid development of a profile; (iv) a means of communicating with students, either individually or in groups, via SMS or email; and (x) a means of taking notes as an observational data collection aide memoire. Instagram and WhatsApp interactions were supervised and recorded via the 'Friendly Instagram for iPad' application, with significant social media exchanges and discussions screen-captured for later data analysis. These screen shots were also utilised with students in recall sessions as simulative tools, and their comments and feedback recorded as data.

3.10.2 Technological Issues

The iPhone and the iPad proved to be advantageous data collection tools, although the iPhone was limited in this use by insufficient battery life and the low sound quality of recorded files. This did not inhibit data collection because quality issues were overcome by enhancement tools, but for the future a specialist, suitably synchronisable digital recorder with high voice recording quality could be used. This would reduce the level of distraction to both the students and researcher.

There were also some limitations noted in the capacity of the iPhone and iPad concerning uploading files onto the storage laptop devices without using iTunes as the intermediary software. In this study, screen-captured shots along with recorded files had to be downloaded to a laptop via iTunes and kept in a secured file with anonymous file codes. This was a time-consuming process, especially with large size files. These tasks were manageable, but on reflection, the processes could have been made easier using more appropriate office-based software tools. Nevertheless, future development of the iPhone and iPad is likely to produce more technically user-friendly synchronisation, longer battery life, and specially-designed applications for data collection and analysis.

3.11 Section 3: An Overview of the Study Protocol and Research Context

This final section is essentially an introduction to the programme I followed when undertaking this research study, the result of considerable reflection on the most appropriate use of the design-based process for examination of the use of social media platforms accessed via mobile technology in EFL education and the learning of Saudi HE intermediate class students. A broad description of the procedure adopted is summarised in Table 3.9 below:

<table>
<tr><td>Before the study</td><td>Week1</td><td>Week2</td><td>Week3</td><td>Week4</td><td>Week5</td><td>Week6</td><td>Week7</td><td>Week8</td><td>Week9</td><td>Week10</td><td>Week11</td><td>Week12</td><td>Week 13 end of semester onwards</td></tr>
<tr><td rowspan="3">Ethical Approval and consent forms</td><td>Pre-Questionnaire</td><td colspan="2">Analysing and reflecting on the experimental intervention in accordance with the Research Design Process implemented</td><td colspan="4">First iteration cycle</td><td rowspan="2">Analysing and reflecting on the Second Iteration.</td><td colspan="4">Second iteration cycle

‘The process and approach may differ following analysis of the focus group discussions from the First Iteration cycle’</td><td rowspan="3">Post-task focus group/ interviews and analysis of the data</td></tr>
<tr><td></td><td colspan="2">Pre-task focus group interview</td><td colspan="4">During-task focus group discussion</td><td colspan="4">During-task focus group discussion</td></tr>
<tr><td>Induction session and training on how to use in-class activities and virtual learning</td><td colspan="12">Implementing the mobile social media application

The whole experimental intervention of the study will be on the continued use of a mobile social media application, namely WhatsApp, outside the classroom for learning, in support of the classroom activities.

Students will have a chance to look into the social media application in class to discuss and comment</td></tr>
<tr><td colspan="12">Observation and recording note-taking of students’ participation/interaction in in-class and online activities using WhatsApp.

The observations will be recorded by note-taking in a journal; students' participation in the application will be observed and analysed accordingly.</td></tr>
</table>

Table 3.9 Particulars of Planned Conduct of the Study Process

3.12 Recruitment of Participants

The researcher formally contacted Al-Imam University and sought permission to conduct the study. Ethical clearance was obtained from the University of Wolverhampton and a letter seeking approval was sent to Al-Imam University, where that approval was obtained. The role of 'gatekeeper' in Saudi universities is to regulate the 'diffusion of knowledge', deemed "a significant strategic resource because it represents the core of organisational learning" to ensure that the conduct of research complies with the cultural traditions and policies of the institution and state (Alawadh and Altameem, 2017). Al-Imam University is a gender-separated campus which did not, however, cause insurmountable access problems to focus group participants. It was a privilege to be granted access to the university students on a mixed-gender researcher-participant engagement project given that Al-Fahad (2012) had to use data collection tools to overcome his lack of direct access permission to participants on a female campus.

The study has employed the concept of convenience sampling, accessing the institution and participants where the researcher is a lecturer in EFL (Somekh and Lewin, 2005). Given the author's limited time in Saudi Arabia, due to obligations undertaking his PhD in the UK, proxy teachers were used to teach both classes from which the participants were chosen, with an observer who helped to take notes for the remainder of the empirical period. The students were requested to participate based on their attainment levels (intermediate) and length of time studying English (at least six years), and all of them agreed to take part (see the section below on ethical issues). This process began with consultation with the Head of the English department at Al-Imam University, a Vocabulary Building Group consisting of 14 students was made available for the study. The group consisted of only eight students. Considered to be intermediate EFL

students who had studied English for at least six years before they enrolled at university, only two had previously studied English in an English-speaking country, one of whom had a father undertaking post-graduate study at a UK university. The students were Saudi-born males and females aged between 18 and 22 years old, all studying to achieve a Bachelor of Arts with a Major in English.

It is worth noting that while students in the Foundation year, including this group of participants, perhaps recognise the importance of learning English, many may never actually use it in academic settings other than in English classes or with the native English-speaking population. As the foundation year is a crucial year for students, primarily due to the link between the Grade Point Average (GPA) and acceptance in the future desired college, students may be hesitant to embark on a four-week experiment around a topic they may feel lacking in significant personal benefits. They are not accustomed to a research culture and may not see its value, or may not perceive it as being of direct benefit to them. This could be why only a few of them filled out the online pre-questionnaire, and when given hard copies during class time, some of them submitted them empty with no responses, while others might have checked the questionnaire boxes without care or attention, resulting in an unexplainable internal inconsistency. Research seems to suggest that actually noticing a benefit may increase the likelihood of seeing improved results in the English language classroom (Gunning & Oxford, 2014). This notion was one of the key barriers while conducting research with this particular set of participants.

This group of participants presumably have better reasons to learn and use English since they are entirely immersed in English language instruction. They are in their second year and have a better command of English and are thus considered to be independent users. Accordingly, this

group of students can understand the main ideas of complex texts, including discussions in their field of specialisation, can interact with a degree of fluency that makes regular interaction with native speakers quite possible, and can produce clear detailed texts and explain views on diverse topics (Watkins, 2011). The participants in the main study would better allow an evaluation of the impact of the new learning mode (mobile phone) and social media on collaborative contextual learning and a co-created collaborative curriculum.

Although the participants were representative of different regions and social class, the sample of students for the study are considered to be monolingual and semi-multicultural. All Saudis have Arabic as their first language and Islam as their religion. Note is taken of Fuller and Szayna's (2000, p.240) statement of character differences, that "numerous substate groups inhabiting Saudi Arabia [can be] differentiated primarily on regional, tribal, and clan bases … [with] a distinct sense of common ancestry) and they may have elements of regional differentiation". Most students in the study were originally from the city of Riyadh and its close surroundings, but their tribal and clan traditions and customs were evident in cultural considerations on the development of mobile autonomous learning and collaborative interaction.

3.13 Teaching Material and Curriculum

The primary text used in L2 classes is "English Vocabulary in Use" by Michael McCarthy and Felicity O'Dell, upper-intermediate level, chosen by the College of English and Translation at Al-Imam University to enhance students' vocabulary and to facilitate interaction with the tutor to develop their speaking and listening skills. This study, in its conducting of a curriculum-based DBR investigation into the perception of the value to learning of mobile accessed social media,

has therefore adopted the traditional programme. This was essential, as the students, after all the experimentation, must satisfy curriculum standards to achieve their degree.

3.13.1 DBR Procedure

This study has examined the affordances of mobile phone technologies for creating collaborative, student-centred, and authentic contextual language learning conditions that go beyond traditional EFL classrooms. It was also designed to evaluate the potential of the mobile learning design principles proposed by Herrington *et al*. (2009) for language learning. Furthermore, as opposed to typical teacher-generated learning designs, this study invited students, as co-collaborators, to contribute their voices, experiences and perceptions into the iterative design cycle. The study was conducted over a 16-week semester using qualitative methods. Using these methods to test and redesign principles and implications, the study design followed the design-based research approach suggested by Reeves (2006), in which he outlined four stages of a design-based research project (see Figure 3.1).

In this section, the data collection procedure and processes across several stages are discussed . The first stage occurred prior to the mobile language learning task (the pre-learning task). The second stage constituted the mobile language learning task (the during-learning task), whereas the final stage was conducted after the learning task (the post-learning task).

The aim of the study was to explore mobile phone technologies and the potential use of social media platforms for the creation of collaborative, student-centred, and authentic contextual language learning conditions that go beyond traditional EFL classrooms. The DBR programme required the input of the student participants into the planning and methods of conduct of their

education, guided by curriculum demands. This study used qualitative methods to test and redesign principles and theories of pedagogy and learning, noted and discussed above, and pictorially represented in Figure 3-4 below:

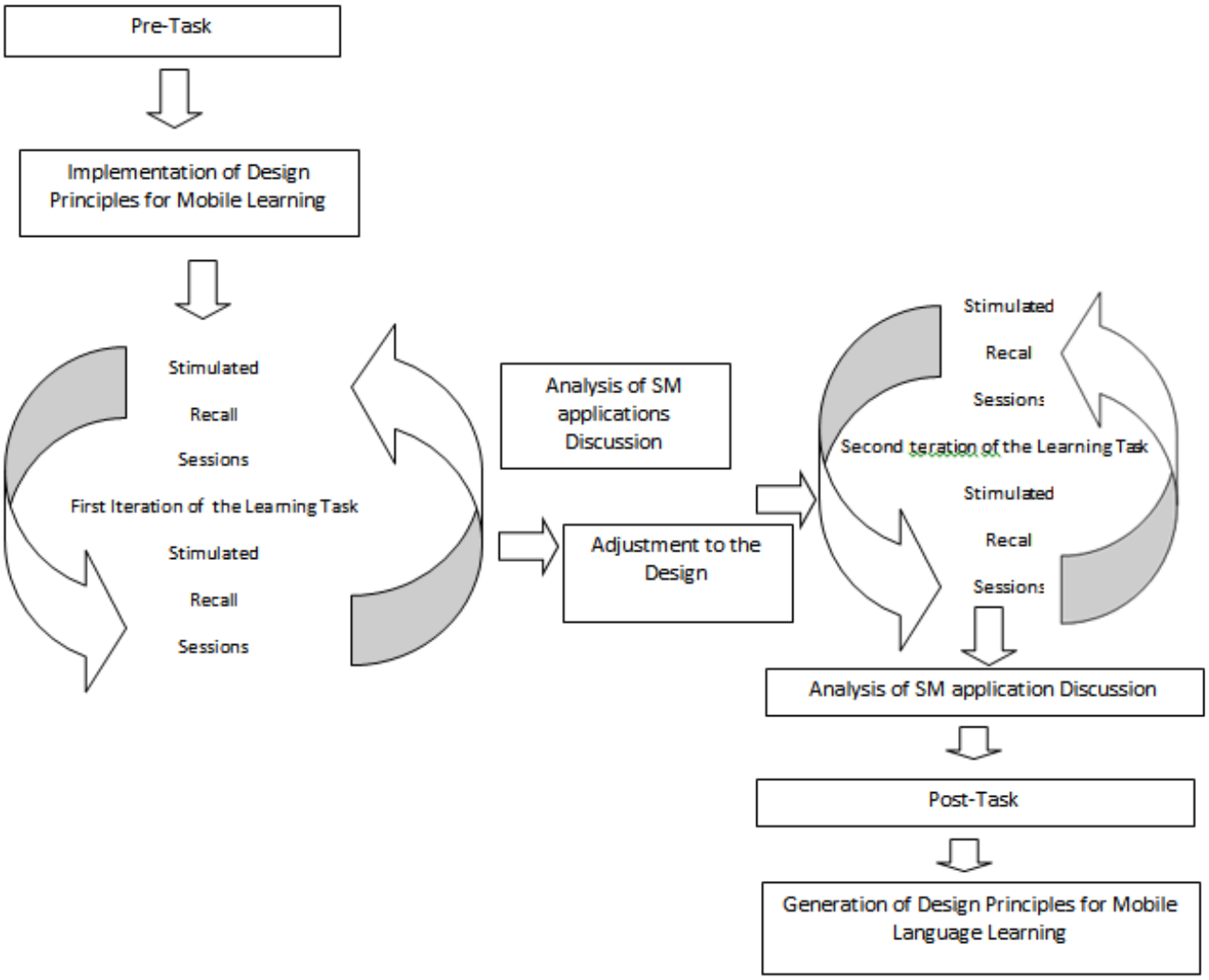


Figure 3.4 The two Iterations of the mobile language learning task and data collection tools inspired by design-based research

3.13.2 Pre-Task Stage (Week 1): The Induction Session

At the beginning of Week one, after students were allocated to their classes and had received their timetables, the teacher introduced himself and discussed the semester programme which incorporated the planned DBR. The process of learning in the months to come was explained, with the students expressing clear curiosity and being encouraged to ask questions about the novel approach they would all be taking to their learning. They were then given the information letter and consent form. Students who returned the consent form indicating their willingness to participate in the study were further informed of their privacy rights and were recruited and asked to attend an induction session. All students in the group expressed an interest in participating. Each owned an internet-enabled mobile phone and was familiar with the relevant features of Instagram and WhatsApp for the updates necessary for involvement in the process. They were comfortable with being asked to use the social networking sites Instagram and WhatsApp for learning purposes and given brief instructions on how to explore the research-relevant features of their mobile phones and Instagram and WhatsApp. They were then introduced to the mobile Instagram and WhatsApp group set up by the researcher and followed by the teacher and had the opportunity to clarify the details of their tasks. Again, it was emphasised that participation was not compulsory, and that if they decided not to participate, their assessment would not be affected.

The students were chosen only because they are studying the same subjects in the same institution, and not according to any other criteria. There may have been personality and confidence differences, a collection of weak and strong viewpoints, but this formed no part of the selection of participants (Cowton and Downs, 2015). The nature of the research, as a curriculum-

based semester of study, meant the target group had to benefit from focus group and activity-based enquiry (Robinson, 1999). Smith (1972) expresses the opinion that focus group participants should be strangers, citing risks of acquaintanceships and friendships which may upset group dynamics, freedom of expression and thus skew the value of the results analysis.

This study required access to students with broadly similar experiences of education, and issues of sampling, cost, time and logistic limitations demanded that it be conducted at an institution which would necessarily encourage interaction. Kitzinger (1994 p.105) has suggested a preference for working with "pre-existing groups, clusters of people who already knew each other through living, working or socialising together" because familiarity aids shared experiences and they comprise the social medium in which the use of social media in education will apply. The participants had been educated for their first two semesters together, and so further met the broad homogeneity requirements proposed, as advocated by Williams and Katz (2001). They had not, however, been taught by the researcher due to his commitments to his UK PhD obligations. As the student body is gender segregated, the male students were taught directly in class on their lesson days of Sunday and Thursday, and the female group on Mondays and Wednesdays from behind a screen with a chaperone in attendance; although the female participants' voices were recorded for transcription and recognition purposes.

There were no incentives offered in this study save for the potential to improve their knowledge and enhance their education. In the conduct of the in-task sessions, the students had an obligation to attend classes as part of their acceptance of the university rules. This reduced the risk of 'no shows' (Grudens-Schuck *et al.*, 2004). Two students who indicated a desire to be involved but were not included in the group of 14 for the focus group, were discretely asked to remain behind

after class in the refectory in case there was a change of mind on the part of a proposed member or two of the focus group. The chosen participants were not told of this stand-by arrangement to avoid them simply dropping out this early in the programme because their absence would be covered. The two potential proxies were released after the first meeting, fully refreshed at the expense of the university, with my thanks.

The female group sampling process and formal education via the DBR programme was similar in content, although the format of recruitment and teaching differed. An experienced chaperone was arranged and approved by the university to be with the class in the sampling and formal learning process in-class. The class of female students could see the researcher using simple screening, but the researcher could not see them. Although the researcher has not encountered in the literature any other study which has incorporated this data gathering practice in segregated Saudi universities, it is a common way for male lecturers to teach female students and there was no 'awkwardness' anticipated. All else in the introductory and teaching process was the same.

3.14 Focus Group Interactions

The researcher remained conscious of potential issues relating to focus group interactions which have the potential to undermine the credibility and viability of the results. These are identified as follows:

3.14.1 Group Interaction Limitations

Without constructive interaction between the participants, a focus group will provide little data of how well a group of students will value and adopt social media as a tool of learning. Robson (2002) asserts that a small group, in this case twelve participants, will have more opportunities to

contribute to the discussion on the limited number of questions used by the moderator to guide the meeting. The added advantage of this group was their past educational, institutional and in some cases social relationships and interaction, which one would generally expect, or at least hope for, in a learning context.

3.14.2 Group Dynamics

It is the role of the focus group moderator, in this case the author-researcher, to make sure that all participants have the opportunity and time they need to participate and state their views and perceptions in the feedback process essential to the effective management of a design-based developmental programme. Strength of personality of one or two can skew a broad-based collection of results to the dominant speakers (Cowton and Downs, 2015) and so emphasis was placed in the introduction script on politeness and allowing others to speak, especially in the context of dispute or disagreement. The prior relationship of this group to each other in the formal teaching sessions of the first two semesters was considered to ameliorate these concerns because the study was designed to limit, so far as is possible. They will simply have a new teacher and conduct specified homework activities as guided and instructed.

The male class was met on the first Sunday after my return to Saudi Arabia, and the female group on the first Monday, involving a ‘getting to know you’ session, as would be the case with any new class, but focused also on the mix of curriculum learning and the research tasks which would complement the traditional teaching methods.

3.14.2.1 First Meeting of the Focus Group

Immediately after class, the smaller 14-member participant group was to meet with a moderator for a 60-minute discussion in a relaxed environment in a pre-booked university meeting room, with a 20-minute break for refreshments (Bers, 1989, p.261). Although not a 'neutral' venue, it would not have been appropriate, nor would it be familiar and comfortable, to arrange for them to be met outside of the university environment (Marshall and Rossman, 2006). Arrangements had been made with a female proxy through the permission of the university to assist with conducting the same process with the female class in the same manner, with the researcher screened, the following day. This was the first time the researcher had met the class group he was to teach. The group was welcomed and introductions made through the use of a standard 'speech' which only dealt with the welcome in a manner which does not impact on the research by way of introducing any potential for bias or expectations of the study itself.

It was appreciated that in relaxing the focus group there can be a tendency to 'chat' with the students, who will have questions about 'how long are we going to be here?', 'is it being recorded?', and more generally, 'what is this all about?' The researcher did not become involved in what is essentially social interaction prior to the meeting and during the refreshment break, and simply responded, 'all will become clear in a minute'. All interaction with the group in the explanation of their role had been scripted, reflected upon, and re-scripted in order that there was no bias introduced or any reflection of particular viewpoints on the part of the presenter; the script is attached (see Appendix G). It was not intended for there to be any deviation from that script, used verbatim by the moderator for both groups.

The ethical issues, as noted above and addressed in the consent form, were dealt with in detail to enable the students to be made aware that they were essentially in control of the group discussion. This too was scripted, reflected upon and re-scripted to ensure there was no feeling of compulsion. The participants were able to read, consider and understand the consent form, prepared in Arabic, when it was given to them for their approval.

The group were advised that the working title of the study and the plan for their teaching that semester was **'The Potential Use of Mobile Social Media Applications in Saudi Arabia Higher Education'** and that the initial introduction questions were designed to elicit further information and discussion on their attitudes to their education and its improvement which could not be gleaned from the questionnaires. The plan, in seeking responses to the general was to gather perception-based data and set the context for the research. The meeting was then wound up and summarised, with confirmation that the date and time of the first task would be posted on WhatsApp.

3.14.2.2 Moderator-Facilitator-Researcher-Teacher

The role of the moderator is to guide the focus group and ask questions based on the objectives of the study to direct the gathering of research data. He or she will act as a 'facilitator', stimulating discussion, encouraging quiet people, making sure all objectives of the study are covered adequately and in detail and communicate clearly (Liamputtong 2011). The moderator must not voice his or her opinions about the topic because this will influence the participants, and it is their opinion that is needed for this study.

It is not expected that the moderator will be passive in simply asking questions and moving the discussion on; Robinson (1999, p.97) expects the moderator to seek fulfilment of the study aims by "giving enough information for participants to see the purpose and direction of the discussion, directing and encouraging the flow". All participants must be encouraged to make an effective contribution to the study in a conducive environment in which they feel comfortable in the expression of opinion and perspective. This essentially describes a duty of a teacher, and this researcher is eminently trained, qualified and experienced in these practices.

Breen (2006, p.468) suggests that "the focus-group moderator should spend a large portion of the discussion time probing participants' experiences, asking them to share and compare experiences, and discussing the extent to which they agree or disagree with each other." This is part of the author's job description, utilised well in the pre-task meeting. It is worth adding that preliminary enquiries about the research were dealt with by providing neutral, procedural-based answers which gave no indication of preferential approaches to task-activities or value-related bias. Teaching experience acclimatizes the qualified teacher to dealing with confidentiality issues, managing conflict, asking questions pertinent to the subject to elicit views, perspective and answers. The gaining of trust and the challenging of responses without causing resentment and inhibition of answering is integral to the job (Robinson, 1999). The author-researcher had confidence in his own ability and that of those assisting "to listen, probe, and direct group interaction … feel confident and comfortable managing focus group participants" (Williams and Katz, 2001, p.24).

In this research study, I was both the researcher, course designer and the teacher working with the learners online. Carrying out the three roles has both its advantages and disadvantages.

Studies show that educational research run by teachers can provide valuable understandings of the teaching experience as well as the nature of students' learning (Mills, 2003). However, being a teacher and a researcher is challenging due to the different and even conflicting purposes and natures of teaching and research (ibid). Creswell (2012) explains that the main purpose of a research study is to understand through an investigation process which involves observation, analysis, and inflection; whereas teaching is concerned with making others understand, maintaining continuity of ideas, and establishing the learning environment in the classroom. Moreover, David (1993) describes ethical and logistical conflicts between teaching and research. For example, he explains that the essence of teaching involves being responsible for developing students' knowledge and skills, treating them with compassion, and providing them with experiences that are of value. However, the core role of a researcher is to gain conclusions with evidence after following a rigorous procedure of design and control to ensure the validity of the evidence (Creswell, 2012).

Because the practice of teaching is mainly dependent on human behaviours and intentions, as well as the specific classroom situation, researchers find typical theoretical research principles and goals unsuitable for measuring the nature of this practice (Mills, 2003). The dynamic of classroom practice is best captured and analysed by a practitioner rather than an observer (ibid). Therefore, despite the tension associated with combining these roles, I decided to adopt the researcher / teacher role because it allowed me to adapt my research questions, the design of my study and the level of interaction, to be sensitive to the learning context or any unexpected factors affecting the procedure, and to be responsive to students' levels and needs. Being a teacher also enabled me to be more familiar with the data as I would be personally involved, and

this would help me to establish a rapport with the participants, which would encourage them to open up and talk freely about their opinions.

However, incorporating the role of teacher along with researcher could adversely affect the validity of the research as teacher-participant interactions might influence the research findings and the interpretation of the observations (Brew, 2006). In other words, my actions as teacher could alter the students' learning experience and what was understood from that. For example, when I found students struggling to work something out, my sense as a teacher would urge me to help them to understand, instead of passively observing how they created their learning, which put me in a dilemma between my role as a researcher and my responsibilities as a teacher. To resolve this conflict between the teacher and the researcher roles, David (1993) suggests an alternative questioning strategy. That is, the research questions should be modified and rather than being interested in observing / capturing students' conceptions and understanding, a shift should be made to investigate changes in understanding due to the teacher's intervention. Another way to concurrently pursue the roles of the researcher and a teacher is to modify the classroom culture (ibid).

Accordingly, in the current study, the research questions were adapted to capture changes in participants' practices, attitudes, and beliefs about vocabulary learning, and particularly vocabulary learning using mobile phone technology. In addition, from the outset of the intervention, I established the norms of the virtual classroom environment. That is, I explained the participants' role and how they were expected to behave in an online environment. For example, they were informed of the need to interact with each other using negotiation and strategies to make meaning, and they should work collaboratively to construct knowledge. They

were also informed that online chat is a good opportunity for new forms of learning and that they were responsible for their own learning and their peers' learning without causing harm to anyone. This would supposedly encourage participation without fear of losing grades or being criticised by others. The students knew that the teacher would not call on them by their names to answer, but they would post entries when they had something useful to post, in order to help themselves and others to understand.

Students were informed that the teacher would not have an authoritative role. The teacher would send bite size lessons to facilitate, for example memorization, and participate in the virtual discussions as a mentor when help was needed. In addition, the teacher's questions would not be aimed at assessing students, but at facilitating understanding and indicating that the student's idea is interesting and needs further elaboration.

Altering students' background knowledge about the perceived role of a teacher is not simple, as students' beliefs about the dictatorial role of the teacher who imparts knowledge and dictates rules is deeply rooted. This meant that discussing the new teacher's role and students' roles was a prerequisite for this research conducted by a researcher/ teacher.

3.14.2.3 After the first Meeting

The following day, the tape recording was listened to and the notes reviewed, with the aim of considering the views and strengths of reaction to the introductory 'settling in' questions, which cannot be reflected on just from the transcription. The tape was then transcribed by a professional transcriber at the university within seven days. The audio consideration process aided analysis and reflection, enabling the identification of how the responses met the themes of

the research to guide the continuing process of preparing the focus group social media homework tasks which form the basis of the research. This exercise was central to the planning of, and reflection upon, the operation of the focus group sessions during the course of the programme. It also provided a valuable source of observational data. Reflection is essential in this research context to:

i. ensure the comfort and relaxation of the group in a classroom session;
ii. address any moderator perceived passivity as a facilitator;
iii. identify how to maximise interaction between participants with the encouragement of debate and control of the more verbose participants;
iv. set the tasks, introducing and timing them for the activities to be undertaken on Instagram as part of their home study, perhaps sourcing different, culturally appropriate images from different sources, creating individual tasks, small group and whole group activities over the following 10 weeks in order to:
v. facilitate continued discussion in the in-task sessions (Kitzinger 1994, p.106-7).

3.14.3 Mobile Applications Forum

In order to facilitate the conducting of this DBR, the author-researcher set up an educational forum on WhatsApp to provide educational activities for students involved in the task processes, in order to obtain data relevant to the exploration of the value of social media in English language education. Images were provided three times each week during the semester of the study for participants to respond to, comment on and answer questions related to the content. The answers were monitored and reviewed in class to determine the views of the participants on the benefits they perceived to their learning, with such feedback enabling reflection on the nature

and format of the activities in the development of the students' contribution to the learning programme.

These were not in-class exercises but were to be fulfilled in their private study time, either individually or as a group, on the basis of their own choosing, save that lesson time would facilitate a feedback meeting. This is an expansion upon Kitzinger's (1994) proposal to treat the homework sessions as an extension of the operation of the focus group using digital mobile technology, which forms an integral part of this investigation; their choices were monitored and discussed in the course of the in-class sessions.

3.14.4 Design, Content and Delivery Lessons

One crucial component of the design of the study, using mobile social media -WhatsApp Messenger – is to deliver vocabulary learning materials (Fattah, 2015; Awada, 2017; Sam, 2016; Koegh, 2017). Complying with vocabulary learning theories, constructivist theories, mobile phone affordances, and the intervention comprises wo essential components: vocabulary and language learning lessons and out of class informal discussions sessions, which is illustrated below. More specifically, it uses two constructed WhatsApp Messenger groups to learn vocabulary. The intervention was originally designed to take on the first cycle of the DBR, four weeks, aligning with the intervention duration of many other online vocabulary learning studies which take around 3 to 6-week intervention period (Lu, 2008; Kennedy and Levey, Saran; 2010). The first strand in the intervention can be described as sending students vocabulary learning messages as a useful technique to complement classroom learning with the objective of developing language acquisition and vocabulary consolidation (Lu, 2008; Kennedy and Levy 2006; Stockwell; 2007). The vocabulary lesson was designed to best facilitate vocabulary

acquisition by conforming to vocabulary learning theories and by making use of the affordances of the mobile phone.

The intervention of the current study was predominantly designed to deliver around 5 vocabulary lessons/ messages/ pictures/ videos per day over four weeks to cover from 80 to 85 target words with embedded strategy training. This frequency is based on the suggestion of studies of mobile vocabulary learning (Lu, 2008; Saran 2010). However, the current study delivered 5 or 6 messages per day throughout the first cycle. Thus, in each week, students actually received from 11 to 18 words with a total of about 75 words during the course of the five weeks. Vocabulary lessons were sent over spaced intervals adhering to the spacing effect which suggests a better overall experience for participants and a higher degree of learning, following the procedure of the vocabulary learning studies using mobile phone as a delivery medium (Lu, 2008). This was facilitated by the affordance of accessibility, which enabled learners to access learning anywhere and at any time since their mobile phones are always with them and lessons can be received immediately whenever there is a signals. Thus, vocabulary messages were sent to students between 9:00 a.m. and 7:00 p.m. during weekdays allowing participants a reasonable amount of time (3 to 4 hours) between messages.

Lessons were divided into smaller components or ‘chunks’ or bite size information in an attempt to have learners absorb as much of the information as possible (Lu, 2008; Kennedy and Levy, 2006; Stockwell, 2007; Saran, 2010). The length of the vocabulary lesson is relatively short as it comprises a sentence, or two at maximum, with not more than 130 characters. Vocabulary lessons could even contain one word, a phrase, or an image at least. This design was devised because it reflects a lower cognitive load for students. It also fits the portable nature of mobile

phone learning as learners learn on the move. Vocabulary lessons introduce partially known vocabulary items as they were previously introduced during regular classes. They display each target word along with only one aspect of word knowledge, showing either the form, meaning, or the use of the target word.

Also, images and pictures were tied to many of the target words depending on their degrees of concreteness to promote memory function. This was supported by the WhatsApp Multimodality affordances (readability- watchability- viewability- listenability). That is, it is expected by considering the aspects influencing memory and cognition and making use of mobile phone and WhatsApp affordances while designing the message, vocabulary lessons would lead to a better learning outcome. In addition, learners could moderate the level of intrusiveness caused by sending the frequent messages by making use of the affordance of availability.

However, the purpose / aim of the vocabulary lessons underwent a slight amendment during the second week of the intervention in the main study. That is, a quick investigation was conducted via WhatsApp to collect participants' feedback about how they found the intervention so far and whether they have any suggestions to improve it. Some of the participants' feedback revealed that they preferred receiving a message introducing the target words every day/ a daily word list, so as to be able to look for further knowledge when convenient (see Figure 2 below). Some of the students even indicated that they could do the job of searching for vocabulary knowledge themselves and then discussing in evening sessions. This reflected the level of independence that these students seemed to have, whereas others seem to still need vocabulary lessons to be delivered. To accommodate different students' needs, a message introducing the target words was sent daily and he number of vocabulary lessons were gradually reduced to encourage

students to do more work, and were replaced by review messages about the target words discussed in the previous chat sessions. Table 11 below shows a sample of a typical vocabulary messages in a day. It also shows a typical size of a vocabulary lesson, and the frequency of delivery.

Table 3.11 Sample of a typical day vocabulary messages

Message 1 9: 30 a.m.	Good morning everyone, Words of the day: Monotonous Unintelligible Precisely Acceleration
Message 2 11::38 a.m.	I feel trapped in a cycle of monotonous activity and want something to give change to my life. What do you think monotonous means?
Message 3 3:50 p.m.	Unintelligible = incomprehensible
Message 4 5:30 p.m.	Acceleration (n) Accelerate (v)
Message 5 7: 00 p.m.	Precisely (adv) Exactly or accurately Nobody knows precisely how many people are still living in Syria.
Message 6	Simulation (n) Something that is made to look, feel, or behave like something else especially so that it can be studied or used to train people

Figure 3.5 below shows a snapshot from WhatsApp group chat. It shows two types of vocabulary lessons: pictures and exemplary sentences.

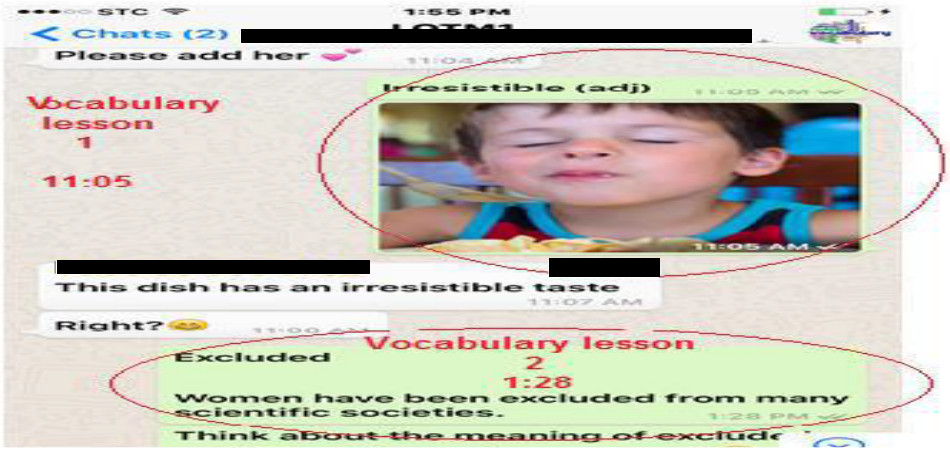
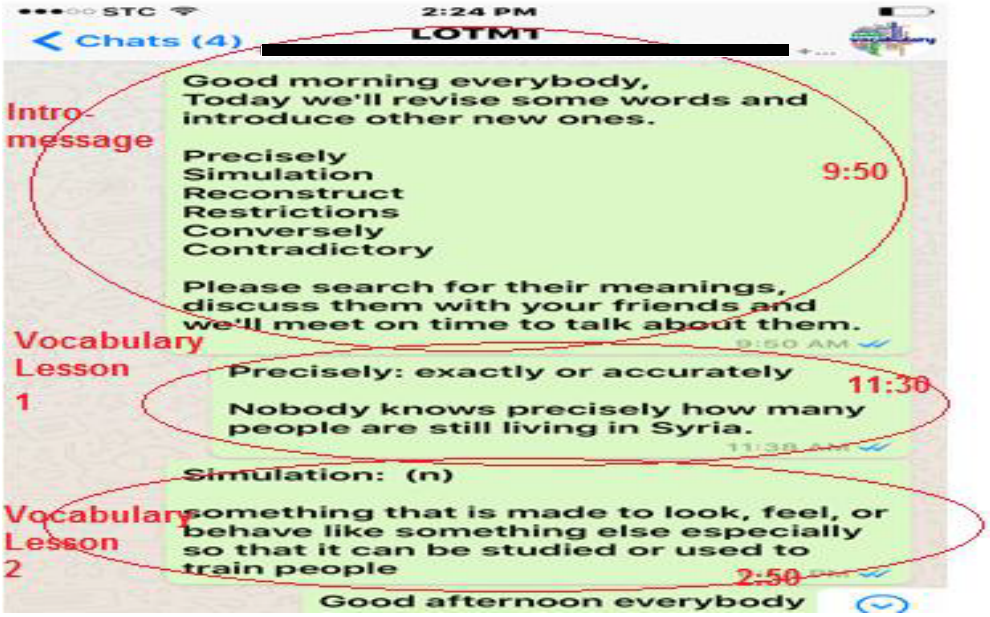


Figure 3.5 Sample of vocabulary lessons

Figure 3-6 below is a snapshot from the WhatsApp group chat. It shows three vocabulary lessons: an introductory sentence, an exemplary sentence, and a definition below.

Figure 3.4 Sample of vocabulary lessons



3.14.5 In-Task Teaching of the Focus Group – First Iteration 5 weeks Lessons and Group Discussions

The DBR programme acknowledges Grudens-Schuck *et al*.'s (2004) assertion that in order to obtain a cross section of views from a diverse population, the researcher should consider multiple sessions with different focus groups to gain a broader perspective. Reflective consideration was indeed given in the contemplation of this research to using different classes, but this proved impossible and disruptive for the institution to arrange. Apart from the time, cost and logistical limitations of this work, thhjne process is not applicable to this form of study in the provision of curriculum-based education. It has been noted that Kitzinger's (1994) suggestion is more pertinent, considering that pre-existing groups holding regular meetings produces a coherent collection of data and ideas which develop with knowledge of each other and shared experiences. The design therefore accommodates multiple weekly meetings with the same group to analyse and reflect upon how attitudes and perspectives of participants may change and the in-task activities be adapted. This practice better suited the nature and context of this study.

Each of the male and female classes were set for one hour on two days each week, during which the first 40 minutes with the focus group task was spent on established curriculum-based learning practices. The remaining 20 minutes were spent discussing the response of the participants to the Instagram activities they had been undertaking in home study.

Responses on the Instagram forum were monitored and considered by the researcher before each class to consider the data available and if it accorded with the themes, aim and objectives of the project, and to enable discussion on identified problems, good practice and gender differences. This was in preparation initially for the end of class feedback sessions, although note was taken

where student preferences were expressed at a different stage of the class. The concern was that they may be distracted by the feedback sessions and not concentrate fully on the curriculum learning of the session.

Students were invited to decide, as the programme progressed, whether they wished to hold the short twice weekly feedback focus sessions after the class time so as not to disturb their basic learning. The research-orientated feedback part of the class was audio recorded, with the knowledge and approval of the group on the same basis as the initial focus group meeting, and immediately sent for professional transcription by a university transcriber. It was listened to and reflected upon for observational data collection before the next session.

In pursuit of the responsibility for preparation on the part of the researcher in the First Iteration, the following question-prompt programme was used in each meeting, so far as they were pertinent to the feedback session:

a) Feedback on the activities undertaken on Instagram as part of their home study – how did they find them? Easy? Interaction with colleagues? Useful? Fun?
b) Researcher's feedback from monitoring the answers and interaction
c) Students reflection on how the tasks can be improved – what do they want from their homework?
d) How effective did they find engaging with the tasks on the mobile social media application in advancing their understanding of language
e) The assessment of students' language use and improvement through the presence (or not) of context in their Instagram/WhatsApp discussion.
f) The identification of communication deficiencies that need to be improved.

g) Time given for when the next task will be uploaded

3.14.6 Summarising and Recording Data from Meetings: Reporting

This was done as soon as possible after the feedback meetings, usually the same day, meeting Harding's (2013) argument that in preparation of a record for analysis and reporting, validity is improved by accuracy in conveying data responses thorough reading and re-reading notes and quotations before transcription. In addition to the student- generated responses, the researcher recorded observational thoughts, memories and opinions where appropriate (Gibson and Brown, 2009).

3.14.7 Social Media Application Monitoring and Review Observations

It has been noted herein that researcher observations work well in a DBR project provided that those observations are flexible and not necessarily structured around a hypothesis as that has the potential to introduce bias (Brown, 2012). The process was conducted before each session to add researcher feedback and suggestions to the discussion, to enable exploration of aspects that could be uncovered or missed in the group meetings and to recognise the issues that the participants might not be keen to talk about in the interviews (Cohen *et al*., 2011). This helped to identify whether students preferred to either access or contribute to Instagram and their location preferences. These factors are important to data collection and evaluation in the effective design of a mobile learning project.

WhatsApp observations were made using the online discussion board observation scheme developed by Nah (2008) (see Appendix F). Using the scheme, student-student and student-teacher interactions were monitored, and the numbers and types of comments were observed and

registered. Also, time preferences for WhatsApp participation were added to the scheme and recorded. The scheme was basically intended to help categorise discussions into themes for the sake of data analysis. Notes were also taken during WhatsApp observation. Moreover, screen captures of WhatsApp interactions were taken in order to use them during the stimulated recall technique. It is important to note that the identities of participants were hidden; that is, the names and real photographs of students were blurred in all screen captures taken from WhatsApp interactions.

In Week eight, participants were classified as High Posters (more than five comments), Medium Posters (five comments), and Low Posters (less than five comments) based on the number of times they had actively participated in the WhatsApp activities. Participations, too, were categorised into Teacher-Student (TS), Student-Teacher (ST), and Student-Student (SS) interactions. The purpose of such categorisations was to:

a. find relationships between the number of participations and perceptions of the mobile language learning task and design;
b. assess students' reflections and feedback on the task design; and
c. assign participants for the stimulated recall sessions.

3.14.8 Researcher's log

Note is taken of the data collection value of the researcher log. Maxwell (2013) argues that a valuable technique in research is to keep a diary of the fieldwork, including ideas and reflections. This was a practice undertaken by the author-researcher in this study, recording student comments and significant questions raised during the interactions as well as providing a valuable prompt to discussion issues gleaned from past meetings and the Instagram-WhatsApp activities.

3.15 Researchers Review and Preparation for the Second Iteration of Lessons in Weeks 4-6

A short break of a week in the programme enabled the researcher to review, monitor and note the nature of the interactions on Instagram over the period of the First Iteration and the data collected therefrom. It facilitated coordination of notes as data, the catching-up on delayed transcriptions and reflection on strategy for the second iteration. The students were, of course, encouraged to continue their usual home study practices and to use the Instagram forum for collaboration and experimentation. It was hoped that this would produce further observational data. It allowed the researcher to meet with a statistics professor at the university for a preliminary discussion on the software available for scientific analysis and how he can assist in the presentation of the data.

3.16 Stimulated Recall

Stimulated recall sessions were conducted in the middle (Week 4) and at the end of the First Iteration (Week 8). A randomly-chosen group of eight students, who had just participated in the WhatsApp and Instagram discussion, were identified for each stimulated recall session. Participants in the stimulated recall sessions consisted of both lower and higher achieving groups as well as high, medium, and low posters. The stimulated recall task was conducted in class and after the lesson, and each participant spent about 10 to 15 minutes with the researcher.

During these sessions, portions of the social media application discussion forum were used as a stimulus for recall to get students to talk about and to justify their contributions. Discussions focused on the language of the WhatsApp conversation, and the process that generated it. This is called “reflection on product" and "recall of process”, as noted by Levy and Kennedy (2004). Each participant had the opportunity to comment on the conversation and notice his own

problems or interesting language elements, which may have included cultural or contextual characteristics. The researcher helped participants to reflect on their work, and to provide clarifications or explanations when needed. In addition, the discussion served to revive the participant's memories of the process of the conversation, and of the learning strategies they had used. The stimulated recall session was intended to:

- identify a rationale for students' interaction and learning process, to draw out their reflections on the design and what needed to be improved for the Second Iteration;
- identify a rationale for the integration of cultural and contextual norms into the interaction, and to assess students' language use and improvement through the presence (or not) of context in their interaction;
- provide participants with the opportunity to focus on their strategies for understanding and conveying meaning and maintaining appropriate social behaviour in the mobile application interaction;
- help students notice their language products, and to help them to justify each segment of interaction,
- identify communication deficiencies that need to be improved; and
- allow students to reflect on their conversation, through interaction and collaboration with the researcher.

During the stimulated recall sessions, discussions were recorded and then transcribed for data analysis.

3.17 Second Iteration

This was operated on a similar basis to the First Iteration period, as outlined above, albeit based on the principle of stimulated recall practices for data collection. The focus of the meeting changed, as did the framework of discussion. In order to formulate and structure the stimulated

recall sessions in the Second Iteration, reflection was undertaken in the preparation of a question-prompt structure to be utilised in moulding the data gathering process;

a) To what extent are they finding benefit, if any, from the increased interaction provided by social media to their learning
b) Has it changed the way they study and learn – if so, how?
c) What communication deficiencies can be identified – and need addressing?
d) What are their own thoughts and reflections on their own contribution to the adjustment of the current learning design?
e) Do they feel more involved in guiding their own learning needs?
f) How do they feel about being so integrally involved in their own formal learning?
g) What do students perceive to be appropriate use of social media and mobile phone technologies throughout the semester, for example, during exam- and non-exams periods.
h) To what extent do they find social media distracts from their learning? – are they tempted to divert from task and socially interact with others in ways unrelated to their education?
i) A discussion of the mobile learning task; what should be improved, and what should be avoided?

3.17.1 Post-task Focus Group Review and Feedback on the study

When the empirical data collection phase of the study concluded, and the focus group had reached a saturation point of involvement, the Post-Task meeting was arranged in week 13 for 60-90 minutes, with refreshments, to conclude the programme. All attended, it having been emphasised that absence could potentially undermine the remarkably good work they had done in the previous weeks. ‘Team loyalty’ had developed over the semester, and this prevailed. In

preparation for the de-briefing, the author-researcher prepared a list of major points to be discussed and focused upon in this last interview (see appendix H).

The quality of the students' contributions and the extent to which they informed the design were taken into account while evaluating the performance of participants and the time allowed for the formal mid-term and final exams carried out with all students in order to meet the assessment criteria of the university.

3.17.2 Post Second Iteration Period: Analysis and Reporting of the Study Results

The information filing system, use of standard software for recording information, preparation and transcription of notes and observations of each meeting and the student involvement in the Instagram tasks worked well throughout the study period. Thereafter, a process of collation and analysis was required, and as a teacher of English, the author-researcher is not endowed with the technical expertise of an accomplished statistician. Advice, assistance and explanation of the presentation of data results was provided by a professor from the Mathematics Department with considerable expertise in statistical representation.

All data from the interviews, recorded and transcribed, were coded based on the main themes identified in the course of participant contributions. These themes were connected with each other to develop clarity of understanding of how the interviewees consider the implementation of social media platforms as a mode of learning, particularly in terms of ease of use and value to vocabulary accumulation. Their attitudes and perspectives were descriptively analysed and connected with one another to distinguish similarities or differences among both male and female students, using the qualitative data analysis software NVivo. Thematic analysis enabled

the identification of categories and their combination into the themes of the study that were related to the aim and objectives (Radnor 2002; J. Mason 2002).

At the second level of the analysis process, based on feedback, male and female student responses were juxtaposed and compared to each other to ascertain contradictions or similarities between attitudes. This was to facilitate a clear assessment of the value of social media applications via mobile devices on the enhancement of English language skills and to lay the basis for policy proposals regarding their application to the informal and formal education framework. Data obtained from both iterations, utilising the entire data set, were analysed using NVivo after the researcher returned to the UK and the original set of design principles was evaluated for their applicability to mobile language learning design in light of students' perceptions, experiences and feedback. This, in turn, generated a set of principles that take both the context of the study into account as well as the discipline of EFL specifically, as noted in Chapter Four (First Iteration) and Chapter Five (Second Iteration).

3.18 Validity, Reliability and Trustworthiness of the Analysis

Reliability and trust in the results of analysis depend on the credibility of the researcher and the nature of the data gathering and analysis procedures for a qualitative study, this one being conducted in a natural setting with real students in their real mobile learning context; it is postulated that the findings have high ecological validity (Bryman, 2008). The researcher employed several strategies for enhancing the validity and veracity of the data recording across the various practices of this DBR, including:

- Intensive, long-term involvement: compliant with complexity theory, this study has collected data over a period of time;
- Rich data: multiple methods have been used to assure rigor and depth in the scientific inquiry;
- Re-read data: transcripts, logs, monitoring of online activity involvement and the researcher's journal notes enabled clarity in the provision and examination of data and the need for supplementation by the students; and
- Triangulation, which enables the checking of whether different instruments yielded the same diverse results (Maxwell, 2013).

The diary-log-journal kept by the author-researcher proved to be an invaluable record of prompts, thoughts and interim assessments (Gibson and Brown, 2009). Considerable detail has been provided on the research process, with comprehensive descriptions of the researcher-monitor role in the study, the type of data collected and how it has been analysed, and the rapport between teacher and students (Radnor, 2002). This has been done to enhance the transparency in the research process and will be discussed further in the Findings Chapter.

The element of self-reporting of perceptions and experiences were integral to the primary purpose of the study, ascertaining how the use of mobile social media outside of the classroom aids EFL learning. It also enabled the collection of data pertinent to the evaluation of learning philosophies and reactions to the design-based research activities which had, so far as the researcher has been able to ascertain, not formed either a basis of study in the KSA or teaching practice. It has been noted that the participants in the interview-focus group process were initially suspicious and somewhat lacking in trust of the researcher, who had not taught them before. This was to be expected in the introduction of a new process of pedagogical practice in

the design-based activity focused education over which they were to exercise a large degree of control rather than the traditional teacher-presentation experience (Giles, 2008).

This 'suspicion' of permission being given to learn relatively unsupervised, using largely unmonitored sources of information and considerable peer interaction does raise some issues regarding the veracity of reported opinions from the participants. The desire to please the teacher, the arbiter of progress and outcomes, is the most obvious. Brenner and DeLamate (2016) suggest that answers may be adjusted to fit perceived interviewer expectations. This explains why the researcher spent much time and effort in each meeting to ensure the truthfulness of what was being said and experienced in the course of the design-based process, and no challenge was made to any contribution by a participant, save to clarify meaning.

Nevertheless, the researcher remained conscious of the fact that he was working with young male and female adults. Taylor *et al*. (2013) point out that their EFL learning is occurring at an age of self-identification and comparison with 'significant others'. The dynamics of relationships with classroom peers, teachers and authority differs markedly from how a young adult will communicate with their close friends. Therefore, the presentation of the public and private self may conflict in the focus group setting and this may be reflected through submission, duplicity and harmony personality practices (Taylor *et a*l., 2013, p5). It was incumbent on the researcher-teacher to look out for, monitor and ameliorate circumstances where this was perceived.

The degree of candour as a variable in self-reporting experiences and perceptions is not measurable, and the researcher must depend on the building up of sufficient inter-personal trust to place reliance on responses. This was done in the current study, as far as was possible, through

researcher reassurance, confidentiality promises and the undertaking of what was explained in the design process. The need to fill any gaps perceived by the researcher in the reflection of the students' actual and ideal self-report of experience depends on an understanding of the individual learner's motivation, learned by the teacher as the project was undertaken over the semester (Dörnyei, 2009, p.29).

3.19 Issues around Analysis and Assessment

Considerable reflection and care were taken before entering into this complex research programme using a DBR methodology and diverse methods of data collection which had to be separately recorded before they could be discussed in terms of themes and veracity. Hence, the study was conducted to ensure the avoidance of any practical, technical or problematic issues that might occur during the main study. This enabled the evaluation, development and amendment of research method instruments and facilitated risk analysis concerning the potential misleading of participants, expressions of bias and the surrendering of neutrality in student dealings.

The researcher undertook training courses and workshops in qualitative and quantitative research methods analysis and using applications to ensure his competence in tackling the data and producing the findings. This instilled a need for the constant questioning of interventions, ways of recording thought and the risks of inaccurate interpretation, avoided by seeking clarity from the students. Criteria, aims, objectives and research questions were discussed with considerably more experienced supervisors which enabled further reflection on the focus of the study and the appropriateness of the tools used, as discussed above.

The next section discusses the ethical considerations of the study.

3.20 Ethical Considerations

When dealing with people, ethical behaviour plays a central role in planning. Ethics concern not only the moral principles and obligations identified by a researcher in relation to participants but also the extent to which a researcher is aware of the risks of the research context, and how to protect oneself and other participants without influencing the research findings or validity (Brinkmann and Kvale, 2017). The issues pertinent to this study include the following:

1) The students were known to the researcher and had the opportunity to remain anonymous during the tests, although this could obviously not be afforded in the face-to-face interviews. They would of course regain anonymity in the collation of the results and in the survey presentation.

2) When confidentiality could be afforded, or any step in the process did not require identification, it was preserved. No-one will be able to identify any individual participant in the research report.

3) Use of mobile sevices was not a particularly sensitive subject of examination, but care was taken regarding a potential desire to avoid discussion of personal based activities in a group setting, so interviews were conducted individually (Guenther, 2009).

4) Authority was also obtained for involvement from all participants, who had all attained the age of majority with the promise that involvement was voluntary.

5) Participant information sheets and consent forms, in which the research purpose was explained at the initial presentation, were signed with participating students being advised they could withdraw from any part of the study at any stage (Appendix D).

The first consideration of a researcher embarking on a course of exploratory study is to ensure he attends to his responsibilities to the participants, particularly when they are young adults involved in collaborative interaction with a teacher-authority figure (Smith, 2003). All physical meetings were conducted on university premises, and in the Saudi context, particular attention had to be paid to all interactions in the traditional separation of the male and female campuses.

Positionality has also been considered and reflected on. Lin (2015 p.30) suggests that the researcher should consider why they are conducting the research and what motivates them, as well as what knowledge will be produced and the potential impact of the research. In the case of the current research, the issues under investigation are important to the researcher's role as an educator and the desire to improve teaching practices. In addition, the results will be used to inform the researcher's own practice, as well as potentially informing education policy in Saudi Arabia. Therefore, while the researcher has attempted to take an unbiased standpoint, there is an element of self-interest. In addition, power relations should be considered with regard to the researcher as the teacher and the students as learners. In attempt to mitigate any power imbalance, the students were asked to share their views, and they were informed that this would not have any negative impact on their studies. In addition, the student participants were told that they had the right to withdraw from the study at any time, again, without any negative consequences.

The guidelines followed by this researcher include those of The University of Wolverhampton in the UK (appendix C) and Al-Imam University in Saudi Arabia, Riyadh (Appendix B). Students were given an electronic link to consider the stipulations demanded of the institutions, which approved the methods of study conduct and assurances regarding the safety and confidentiality

of data storage. The data protection legislation of both countries was explained briefly, to the extent of the researcher's limited understanding of the law, with links provided for more information. The participant students expressed satisfaction with the safeguarding arrangements through their signature on the detailed consent form. The time and campus-based venue for the first focus group interview were fixed at the convenience of the respondents. At the end of the interview focus group, the respondents were thanked for their time and the information and views they had provided.

3.21 Summary and Conclusion

The selection of philosophical paradigms and the approach to the methodology adopted in the flexible, adaptable Design-Based Research programme undertaken in this exploratory study arises from reflection on the learning gained in the Literature Review Chapter. This guided the choice of methods and the planning of courses of action, which arose from a more specific reading of material on research methodologies, as presented in this chapter.

Utilising the theoretical concepts of design-based research and associated qualitative methods and tools of data collection, the study will, it is hoped, enable findings which develop new theories and policies to enhance language learning in Saudi Arabia, and form a basis for lesson-based research in a broader international context. This chapter has indicated the importance of the process of recruitment of participants and the background of participant students in their institutional learning setting in order to foster better planning for curriculum-based learning outside of the classroom using mobile, social media technology. The sources of data in the DBR programme were diverse, reflecting the encompassing nature of the exploration of the issues discussed The thematic analysis and categorisation was assisted by digital software, as described

above. The range of sources and data generated by mobile phone and social media technology has enabled a view to be taken on the veracity of the learning theory of connectivism, which is associated with a rapidly changing digital environment. The format for the research planning is encapsulated in Figure 3.7.

The following chapters will present and analyse the data obtained from these research phases. Chapter Four provides the results of the analysis of the findings from the First Iteration, including an overview of the tools used to collect the data. This is the focus of the research aim - to develop a descriptive assessment and evaluation of student experiences as EFL learners and their perceptions of the use of mobile social media applications in their learning. The data obtained from the Second Iteration is analysed in Chapter Five in a manner and for a purpose similar to the data from the First Iteration. Chapter Six will discuss the results and link these to the research questions, the implications of the theoretical framework, and suggestions for further studies.

Research Objectives:

*identify learning strategies which the students utilise in their learning in the use of the WhatsApp and Instagram social media platforms;

*investigate how social media interaction between students and teachers will impact on language learning and retention through collaboration in activity planning and performance;

*accumulate data on the attitudes and motivations of students in their use of social media through the smartphone in their language learning outside of the classroom;

*show how lesson planning based on the interactive practices of the design based research model improves motivation, self-learning, collaboration and student involvement in their own education, all via DBR Connectivist Mobile design.

Paradigm:

Mixed of qualitative and quantitative methods

Embedded mixed method

Research Methods:

Design Based Research

Case Study

Data Collection Methods:

Questionnaire

Focus Group and interviews transcription

Observation

Researcher's (note-taking)

Participants' logs

Participants messages

Overarching Research Question:

to investigate the role of social media platforms, accessed via the smartphone device, and its potential value as a learning support tools in the cultural and contextual experiences of Saudi higher education learners.

Research questions:

1)What are the perceptions of Saudi university students toward using mobile social media applications in language learning?

2) To what extent does the use of mobile social media applications and mobile technology affordances promote English language learning motivation and collaboration in the context of the particular, traditional educational practices practices of Saudi Arabia?

3)To what extent does a design-based research approach can provide a suitable framework to test, refine and adjust current learning principles and practices?

4) What challenges and design principles are encountered in the implementation of mobile social media

Sampling Strategies

Non-Probability

Convenience and purposive sampling

Researcher's Stance:

Insider Researcher

Tutor and observer

Evaluation and Standards of quality:

Credibility

Transferability

Dependability

Confirmability

4 Chapter Four: Findings: The First Iteration

4.1 Overview of Chapter 4

The data analysis has been conducted in the context of meeting the objectives of the study and answering the research questions in order to reach the aim of ascertaining how teachers and students can make use of digital communication mobile technology to motivate and enhance collaboration in English language learning in the cultural and contextual experiences of Saudi higher education learners with a view to the improvement of retention and language use outcomes. The results of the data analysis address the research questions proposed in the study, which are:

1) What are the attitudes and experiences of Saudi university students with regard to using mobile social media applications for language learning?
2) Does the implementation of mobile social media applications promote language learning motivation, autonomy, collaboration, and contextual and out-of-classroom instruction?
3) In what way does a connectivist design-based approach serve to improve language teaching framework in Saudi Higher Education by refining and adjusting current learning principles and practices?
4) What mobile-learning-related challenges and principles were identified in the implementation of mobile social media application learning in a Saudi higher education context?

The chapter arrangement is presented in this section, along with the approach to the descriptive findings of the pre-task questionnaire, followed by the data obtained from the pre-task focus group interviews in section 4.2. Students' experiences and the difficulties

associated with their EFL education will be described, along with providing an insight into their mobile phone and social media usage and preferences, as well as their perspectives on pre-study activities and how they see their learning being enhanced.

Thereafter, the findings from the First Iteration following the 'in-task' use of WhatsApp and Instagram activity will be collated from researcher observations and student-led stimulated recall sessions. Then the analysis of the student discussions and interactions during task performance are presented in Section 4.4, including assessing the students' experience feedback and expectations, in order to meet the research objectives, particularly concerning the integration of in-class and out-of-class learning activities via SM collaboration activities.

The development of student strategies for understanding and conveying meaning and maintaining appropriate social behaviour during SM application interaction for the First Iteration is described based on the responses of the participants. This is designed to meet the research objective *to identify how are the students utilise in their learning in the use of the WhatsApp and Instagram social media platforms*. It also answers the research question on *the challenges and perceptions of Saudi university students toward using mobile social media applications in language learning.*

4.2 Findings from the pre-task questionnaire

The pre-task questionnaire was presented to the target classes on the male and female campuses in the first induction week, and was administered before the study started. Designed to ascertain student perceptions of the use of mobile social media applications for

learning English as a Foreign Language (EFL), the data has been analysed and presented descriptively. An analysis of the responses has revealed the following key findings:

i. All respondents accessed social media applications and were capable of operating *WhatsApp and Instagram;*
ii. given that the software is free (subject to add-on facilities which do not form part of this study), it is concluded that there is no financial or technological bar to this self-learning tool, except for the cost of internet access;
iii. 80% of participants indicated previous experience of using social media applications for vocabulary learning and discovering new words, and that they have used online dictionaries to look up new words, which is indicative of familiarity with the value of technology to learning;
iv. between 60% to 80% indicated that learning words was facilitated by including them in a context descriptive to their use, showing a degree of interactionist learning, and
v. 83% found vocabulary learning and study improved though smartphone use to be of value, albeit to different degrees;
vi. the majority of the participants were motivated to learn English through the use of social media applications due to the anytime, anywhere ease of availability.

The questionnaire consisted of four parts which explain the source of the key findings, and these are explained below to support their veracity.

4.2.1 General Background Information on Social Media Use

Section 1 of the questionnaire consists of five items that elicited students' profiles and their use of social media applications. All students of both gender classes, aged 19-22 years old,

indicated they use mobile devices and social media applications. Differences were noted in their level of skill in social media use for language learning purposes; the majority ranging from intermediate to advanced level, with beginner grade being sufficient for participation in this empirical study (Figure 4.1).

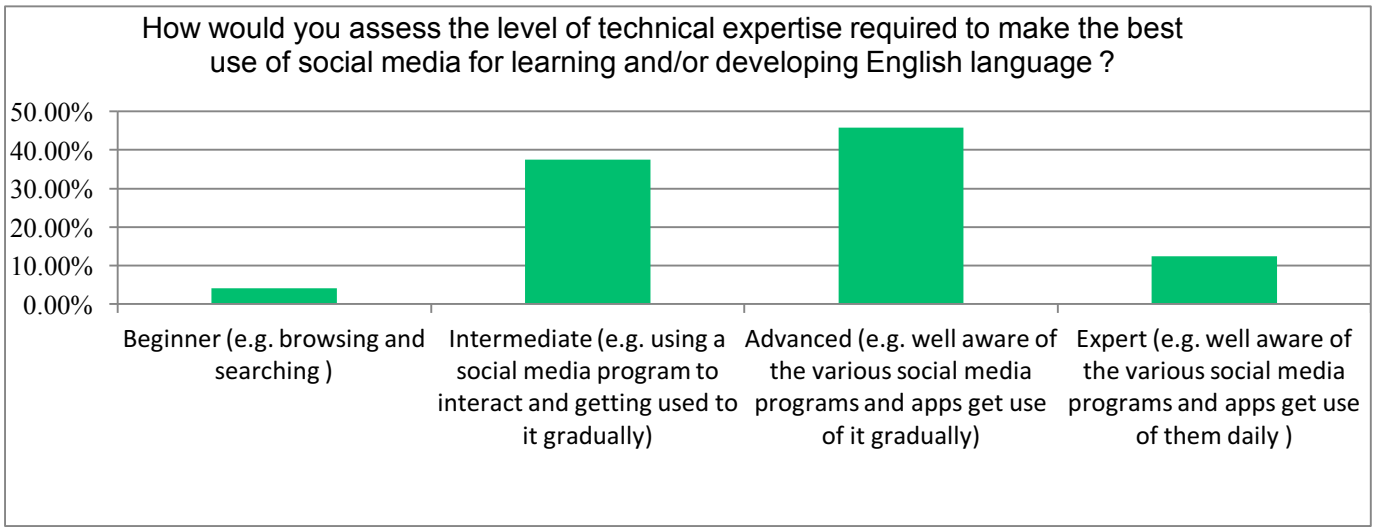


Figure 4.1 Level of technical expertise

Reflecting on the design of the research activities, these results provide valuable insights into the standards to be accommodated in task preparation and instruction, which should embrace the range of confidence of participants in the social media-language learning project (Figure 4.2).

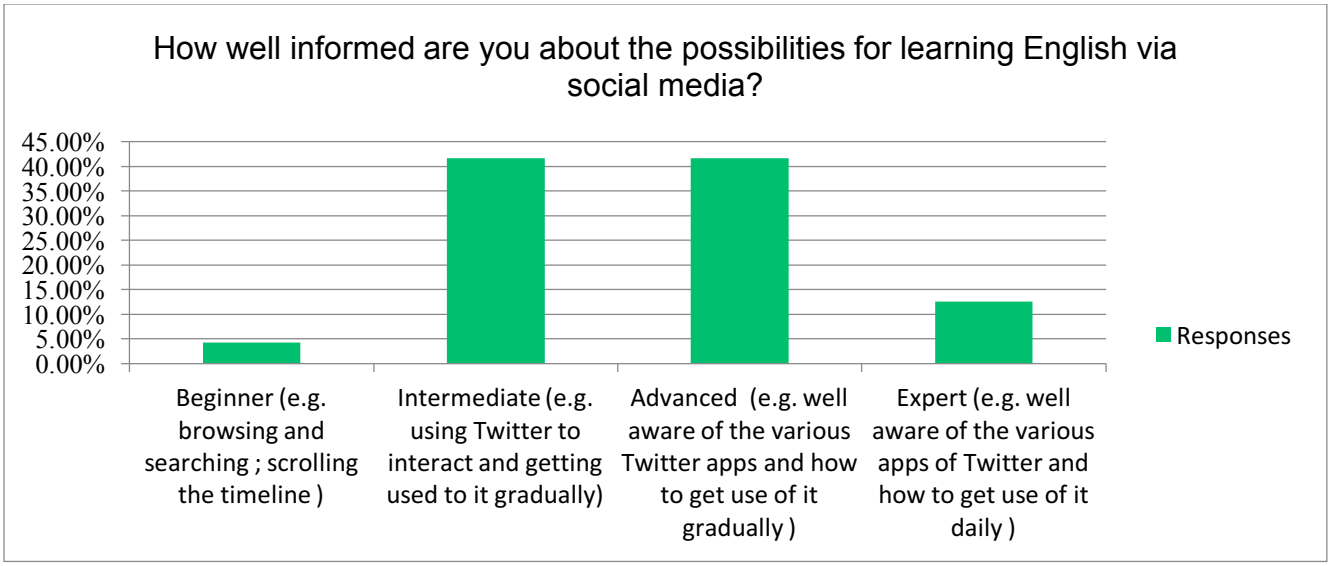


Figure 4.2 How students are well informed of using SM

4.2.2 Perceptions and attitudes on the use of mobile phones for learning

Part two of the questionnaire consists of 15 item-enquiries that elicited students' attitudes toward using mobile social media applications and their degree of experience. Table 4.1 indicates that less than a third of respondents had attended a class in which use of social media was encouraged or necessary, although 76.2% answered that they use social media tools to communicate with their teachers. Indeed, 83.3% believed greater use should be made of such platforms in their English language education, with nearly all (92.9%) suggesting it was the best way to reach students. The length of social media usage differed, but the results are encouraging concerning its use in the language education process, with evidential support for greater teacher-student interaction in a manner that differs from the traditional Saudi pedagogical, teacher-led classroom-based framework. This data provides a foundation for the study's assertion that students need to be more involved in their learning, reducing dependence on teachers, as this undermines outcomes.

Table 4.1 Questionnaire Enquiry

Statements	Answers	Frequency	Percentage
I have taken a class where social media were used	Yes	29	69
	No	13	31
	Total	42	100%
I have used social media to communicate with my teachers	Yes	32	76.2
	No	10	23.8
	Total	42	100%
I understand social media websites that are in English language	Yes	26	61.9
	No	16	38.1
	Total	42	100%
I think that using social media is the best way for teachers to reach students	Yes	39	92.9
	No	3	7.1
	Total	42	100%
I have used social media tools for:	2 to 7 years	23	54.7%
	2 to 3 years	13	31%
	8 years or more	6	14.3%
	Total	42	100%

These results were expanded upon as the questions in this section developed during the path of enquiry, and Table 4.4 below shows that nearly all of the Saudi EFL student participants (95.2%) believed the use of social media to play a potentially important role in their learning. This by itself is a portent of changes in learning and teaching practices, whether autonomous or guided by teachers. In the traditional religious Saudi educational environment, it supports the contention that teacher direction will preserve social and faith values by directing the focus of knowledge gathering. Social media, and access to the global information network, is deemed important to a developing learning culture using the facilities of digital technology. Circa 90% of students have already adopted technology in their learning, with over half perceiving a reduction in their dependency on teacher-presentation and control, or certainly augmenting classroom lessons (61.9%).

Table 4.2 Perceptions of social media

Statements	Answers	Frequency	Percentage
I think that social media are important for learning	Yes	40	95.2
	No	2	4.8
	Total	42	100%
I use social media for learning at college	Yes	37	88.1
	No	5	11.9
	Total	42	100%
I think that social media have changed Saudi students' learning culture	Yes	38	90.5
	No	4	9.5
	Total	42	100%
I think that using social media in teaching is effective in supporting students' learning processes	Yes	26	61.9
	No	16	38.1
	Total	42	100%
I think that using social media in teaching decreases the dependency of students on their instructors	Yes	21	50
	No	21	50
	Total	42	100%

The major concerns and barriers to the broader use of social media platforms have been expressed by respondents as distraction from the formal lesson presentations (89.9%), compromise of Islamic teaching (89.9%), privacy issues (40.1%), and cyberbullying (38.1%). Hence, the incorporation by teachers into a learning programme and the regulation of resources are imperative to the design-base of lesson activities.

Table 4.3 Concerns about using Social Media Applications for Learning

Statements	Answers	Frequency	Percentage
I am concerned about privacy issues related to the use of social media tools	Yes	18	40.1
	No	24	59.9
	Total	42	100%
I feel concerned about the dangers of cyberbullying when using social media	Yes	16	38.1
	No	26	61.9
	Total	42	100%
Social media usage could distract students' focus away from academic learning	Yes	29	89.9
	No	13	10.1
	Total	42	100%
Some contents of social media oppose Islamic religious teachings	Yes	29	89.9
	No	13	10.1
	Total	42	100%

The literature review has indicated that social media is not a major teaching resource in global educational frameworks, and it has not been adopted in Saudi universities. The risks of unregulated access to knowledge in a profoundly faith based society are recognised by teachers and their students, and so social media plays no part in the institutional pedagogical process, despite a generally high level of student adoption of these tools and recognition of their value (Table 4.4). It therefore falls to the institutional and governmental education infrastructure to design a learning process which exploits students' perceptions of value to learning whilst ameliorating cultural and social concerns around privacy and unproductive critical behaviour. This has guided the reflection on, and preparation of, the design of this research process.

Social media facilitates autonomy in learning whilst potentially supporting interaction and collaboration, the latter factor, in particular, being explored in this research design. Given that

there was little anecdotal evidence of educational interaction between students in a teacher controlled classroom, and indeed the different personalities noted in the findings and meetings, students have to learn to both collaborate and work autonomously. This is a fact supported by the literature, such as Healey et al (2014) in their 'Engagement through partnership' study. It places somewhat novel responsibilities on Saudi teachers concerning training requirements and the preparation of lesson programmes and monitoring to capitalise on such a valued resource. There is no suggestion in the findings that social media learning or mobile digital technology can replace formal institutional teaching. The platforms do not adequately accommodate the Arabic language, and technology has a habit of failing to provide on its promises in terms of dependability; furthermore, nothing can replace the guidance of a trained expert and empathetic teacher. Attention is finally drawn again to the risk of social media being a distraction when young adults should be learning.

4.2.3 General questions regarding usage and preferences

One of the objectives of this research was to explore student experience and familiarity with mobile smartphone applications in daily life. The questionnaire then sought, in Part 3, to identify the students' social media platform preferences from the range of interactive sites now available on the internet. The four most commonly used were Instagram, WhatsApp, YouTube and Snapchat, with 80% to 84% of students using them, closely followed by Twitter. This confirms the researcher's presumptions based on statistical research and aided by a pre-questionnaire design-based activity using Instagram and WhatsApp (see Figure 4.3).

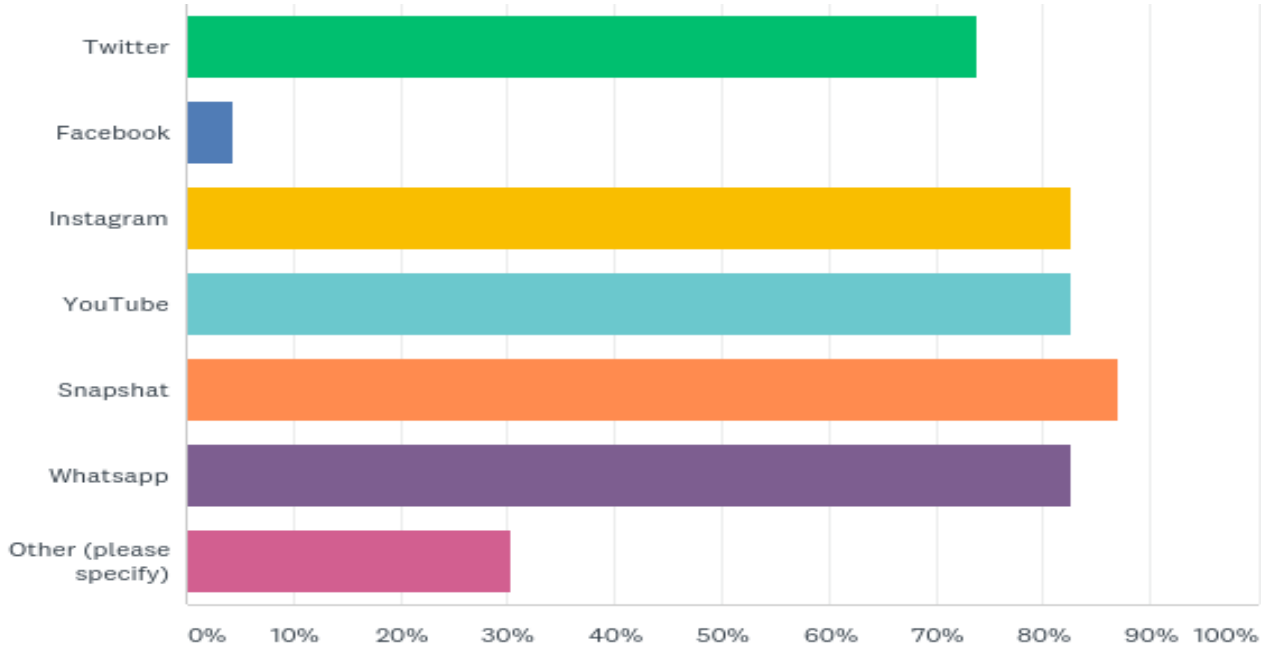


Figure 4.3 Social Media Preferences

In order to particularise aspects of language learning through the use of social media platforms, the students were asked, in Question 4.2, what specific tasks they use it for to promote learning and understanding. Eighty percent responded that they concentrate on ascertaining vocabulary meaning, with 54% expressing an interest in interacting and chatting, which supports the design of the study. A few explore simple language terms and short informative pieces such as news reports. This gives some indication of the ability to contextualise the use of language (see Figure 4.4).

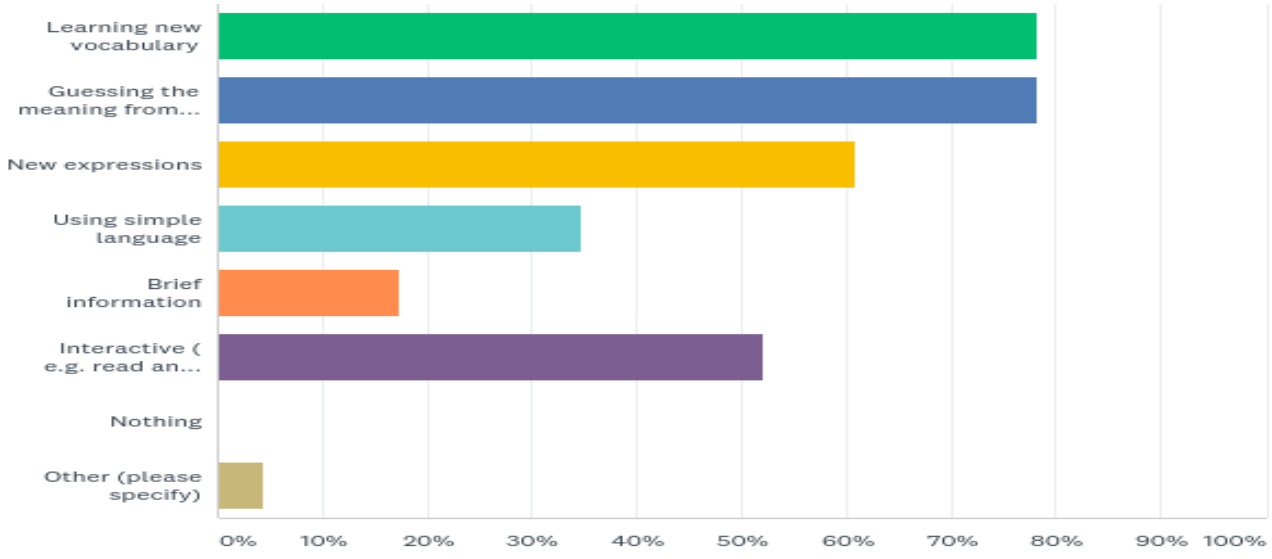


Figure 4.4 Social Media and Learning

More than two thirds (69%), however, expressed a dislike of the habit of other social media contributors using informal slang words, which they thought undermined their traditional social standards and inhibited learning for some (30-34%) due to misspelling or misusing language. They also did not like the use of abbreviations.

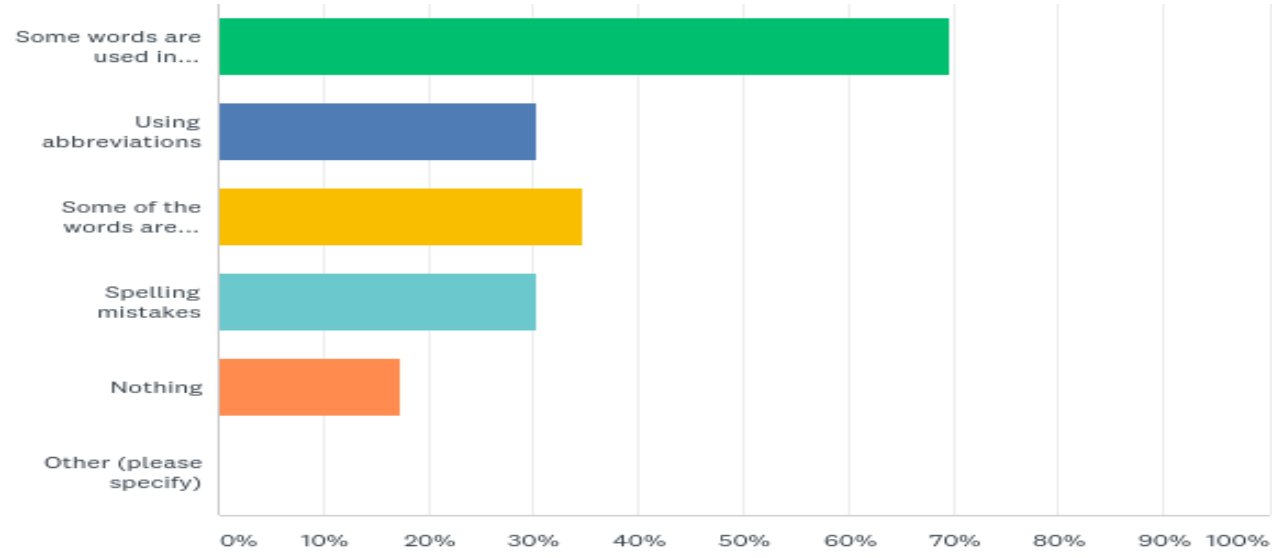


Figure 4.5 Use of Abbreviations

4.2.4 Students' Attitude and Motivation toward Smartphone use for Vocabulary Learning

The questions on the last category asked respondents to indicate their attitudes and motivation toward smartphones uses for vocabulary learning. It will be borne in mind that this occurred before the main study use, and the views of the students, particularly those who indicated they did not use the device for that purpose, were largely based on perceptions rather than evidence. Table 3 below describes the statistical findings from leaners' attitude toward smartphone uses for vocabulary learning.

Table 3: Descriptive Statistics of Students' Attitudes toward Smartphone use for Vocabulary Learning

Revised statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Median	Mean	SD	Rank
I am not willing to download paid applications on my mobile phone to improve vocabulary learning	12.3	15.4	35.9	20.5	15.4	3.00	3.11	1.21 2	5
I do not like to use smartphones for vocabulary learning	3.6	9.2	8.7	37.4	40.5	4.00	4.03	1.09 4	1
The use of smartphones for vocabulary learning is a waste of time.	1.5	7.2	7.2	26.2	57.4	5.00	4.31	.992	2
The use of smartphones for vocabulary learning is difficult.	13.3	19.0	13.3	26.2	27.2	4.00	3.35	1.40 7	4
The use of smartphones for vocabulary learning is boring.	5.1	7.2	23.6	29.7	33.8	4.00	3.80	1.13 9	3

Keys: 1(5 for revised statement*)=strongly disagree, 2 (4 for revised* statement*)=disagree,*

3= natural, 4 (2 for revised statement*)=agree, 5 (1 for revised* statement*)=strongly agree*
This clearly indicates that the majority of participants have positive attitudes toward the use of smartphone applications for supporting vocabulary learning

- 83% of the participants indicated that smartphones are useful for learning English vocabulary, although
- 25% thought it boring and a waste of time even though a number therein had indicated it did have its uses; the remaining
  * 5% indicate no views.

4.2.5 Open ended questions regarding perceptions of the EFL education process

It is of little surprise that students in the male class suggested having the English course taught by native speakers of English, which would broadly overcome competency concerns and aid contextual understanding. This is a policy issue which cannot be explored in this study. It does however give rise to recruitment issues regarding sourcing English teachers, but also expanding opportunities for Saudi professionals to undertake sponsored learning abroad. This would ameliorate some of the concerns expressed by students that they need more convincing of the importance of learning English to their economic futures. A large number of the students suggested adding motivational learning tools, such as mobile technology, interactive social media and video aids to support understanding. This would involve a considerable change in Saudi faith based social attitudes to knowledge and information access, and raises questions around the introduction of connectivist learning and pedagogy in the education framework.

With regard to the Teaching Method theme and the comments classified thereunder, 16 students suggested changing the whole traditional style of teaching. The majority, across both gender

classes, expressed a need to practise learning in real-life situations; 23 students specifically mentioned the need to learn language skills, not simply grammar with no focus on communication, listening or indeed entertainment. Some wanted to be challenged by English language based projects, something that the current teaching method does not include; three female students in particular want learning activities personalised to what interests them. This forms a principle purpose of the design basis of this research study. Collaborative activities do not form part of the current Saudi language education process and students are clear in their view that this must be changed. To that end, the focus group with the participants in this empirical study will aid in understanding how learning needs can be better met and outcomes potentially improved.

4.3 Findings from the pre-task focus group interview

The pre-task focus group interview took place in Week two with the same 14 students from each class, male and female genders. The first focus group and interviews collected data about the students' backgrounds as EFL learners relating to the general or language learning difficulties that they may have encountered and the solutions they have adopted to deal with such obstacles. Students' context-awareness of their learning experiences related to their social backgrounds and faith practices was gleaned to enable an insight to be gained into potential factors affecting learning. This is to answer the Research Question: ***what are the challenges and perceptions of Saudi university students toward using mobile social media applications in language learning?*** The interviews also explored when participants like to learn, time and location preferences outside of the classroom using the mobile phones, and the internet and social media as part of a discussion which would guide the development of the DBR project design. This

qualitative data was coded and classified into six thematic areas and analysed using NVivo qualitative data analysis software. A list of codes and themes are attached in Appendix …. Six themes were identified in the course of the analysis of the focus group responses, which have guided the DBR process:

i. Concerns and critiques about the current teaching method;
ii. Experiences with EFL education;
iii. Context-awareness;
iv. Experiences with mobile phones, mobile phone internet, and SM application;
v. Expectations of the use of mobile SM application for contextual language learning; and
vi. A discussion of the initial design of the current task.

4.3.1 Concerns and critiques of the current teaching method

In the course of the focus group interviews, the students indicated that they believed the current traditional teaching method is not effective, with some 88% of male students and 95% of female students, correlating broadly with the findings of the larger questionnaire groups. This finding is indicative of a profound need for policy change and provides a foundation for this DBR programme:

> *In fact, the teaching of English has never been satisfactory during all my English studies starting from secondary school until university level. Believe me, if the native speakers of English knew that we studied English like this they would be disappointed* (Male Student: 5).

The passivity of the learner's role in current teaching practices was repeatedly mentioned in the focus group interviews - by both the male and female groups, with the lack of control or input

into learning being a common complaint and a reason for the lack of achievement. By way of example, one responder commented:

> *The problem with the teaching method that we have been using is that it is an instructional way of teaching. It is just injecting the information into our heads and this has created negative results, and made the students hate the course* (Female Student: 6).

The need for English language competence was generally accepted as a path to future personal economic success and an overwhelming desire to learn and to enjoy the subject was revealed, but its didactic and teacher-centred presentation alienates learners:

> *'I like English as a language, but the thing that I dislike is the teaching method of the language'* (Male Student: 5).

This opinion was shared by the female group, criticising the lack of opportunities afforded by the pedagogical framework, to practice language communication and use during the class and outside. There was no teacher input or guidance on such learning practices, and the more cognitive and contructivist learners sought their own outlets:

> *Nowadays, technology has changed and teachers should change. I spent hours on the Instagram and WhatsApp group learning to develop my English. I opened the app at a minimum of between 8-12 times every day for a total of around 2-3 hours as I enjoyed using it. What I like most about social media applications like Instagram and WhatsApp, are that it is entertaining and enjoyable. You can view other students' contributions and how they interact with each other. If the tutor is active, he or she will encourage us to carry on* (Female Student: 6).

Almost half of the students believed their views and dissatisfaction was shared by most of their classmates - a rather depressing vision of classroom learning which explains the unproductive outcomes in Saudi EFL learning. A potential solution was suggested by the Female Student 11 on the value of extra institutional learning sources, which will no doubt form a basis for future research into language learning but is not within the remit of this study:

> *Our problem is not with studying the foreign language itself, however, our real problem is with the content we study on the English courses. We merely study the language rules which are irrelevant to the real goal of language learning. Our way of learning is similar to bringing an English speaker who wants to learn Arabic and you give him/her the grammar of Arabic. How would this learner use the language for communication without knowing any language skills beyond the grammar rules? The results we get from watching English-speaking TV channels and English movies are more beneficial than the English courses at the university* (Female Student: 11).

More than half of the student respondents in each gender group were critical of the grammar-linguistic emphasis on their language education, with little attention paid to communication. This had been noted in the more extensive questionnaire process. The frustration expressed in person in the focus group interviews was however more palpable and expressive:

> *One of the main factors that has caused the current teaching method to be unsatisfactory is its over-focus on grammar and its neglect of the other language skills, like conversation. Social media has lots of resources and easy explanations of learning. I spend hours on Instagram and watch better videos of English than the tutor. Giving the students chances for conversations and discussion and being open to contact via social media is more important in learning than injecting the grammatical rules* (Male Student: 2).

Classroom, teacher led methods of presentation were considered boring, lacking in fun and de-motivating:

> *The current teaching method lacks the enjoyment factor which is important in learning a language. Language learning should be enjoyable, allow for conversation and discussion, and have group work. That is why social media is now attracting teenagers* (Student:11).

Teacher-related concerns were specifically complained about by 75% of male students and 95% of the female group, echoing the findings from the questionnaire, and again, the competence of some teachers in conveying knowledge with clarity and understanding was questioned. Limited resources were targeted by both groups, as 55% of the male students mentioned lack of teaching aids such as social media interactive platforms. The researcher pondered whether this social media specificity relates to the initial explanations of the study programme, but considered it inappropriate to explore the relatively simple statement regarding it as a learning resource any further to avoid introducing potential bias through confirmation of value. The female students also expressed a desire to use more interactive alternative learning aids denied by the presentational format. By way of example, one student commented:

> *There have been great developments in modern learning aids beyond the limited teaching aids of the traditional textbook, the blackboard. There are modern teaching aids that can help better in teaching, such as projector presentations, and real conversations in simulations using computer programs (Male student:8).*

The failure of teachers to adapt their pedagogical practices to incorporate new learning and teaching aids and resources, is understood by two of the male respondents in particular to be a further reflection of a lack of proficiency of the teachers in technology, and how to promote the

communicative use of English. This embeds negative attitudes towards language learning, with a few students failing some English courses several times, one having undertaken traditional EFL classes four times without achievement. He explained, '*the teaching method was the problem; the student attends the class; it is boring and learns nothing'* (Male student: 11). It seemed inappropriate for the researcher to question the effort he personally sought to put into learning and it was hoped that a methodological change through the DBR would improve his prospects.

During the focus group interviews, the students were asked to provide suggestions and solutions to improve their attitude toward learning English. Notably, both male and female students saw the use of mobile devices and social media applications as the key to improving students' attitudes. However, it is not known whether this assertion is reflective of their knowledge of the DBR of the current study, which had been explained to the students during the early part of the preparation. More than one third of the interviewees suggested changing the whole curriculum and the teaching methodology, and trying different teaching methods as a solution. One of the female students commented:

> *I wish that the decision makers would respond to our requests and change the curriculum and the teaching method in high schools and universities as well, so that we could achieve our language learning goals. The current teaching method, however, is merely a waste of money and effort and the outcome is not satisfactory* (Female Student: 14).

More than half of the students suggested that they wanted to have an active role in the learning process and to be given opportunities to practise the target language in real-life situations. This percentage grew to 90% of the male students and 95% of female the students in the assertion that

teaching methods should cover all language skills, with less focus on grammar technicalities. Their general goal was the ability to hold and understand a conversation in English.

4.3.2 Experiences with EFL education

As experienced learners in the Saudi tradition, and having reached the tertiary level of education, the students were asked to elaborate on the limited degree of contextual communication of in-class learning and the limitations they perceived this caused to their understanding. Ninety percent of the male students and all the female group commented on the lack of practice opportunities outside the classroom as a major problem for embedding knowledge. Their solution was greater integration of more intensive speaking and vocabulary courses at the beginning of university studies, with one suggesting that courses taught in subsequent semesters, such as phonetics, should be brought forward to help with correct pronunciation.

It was noted that outside of the classroom, in real life, 10% of male students mentioned that they frequently speak in English with non-Arabs at places like restaurants and hospitals. In a conservative Saudi society, women, however, have fewer such opportunities but maintained considerable motivation to learn English through communicative means, with one student mentioning:

> *For me, I always practice English especially speaking. Cambly application is easy to use although it is expensive. It provides English-native speakers to practice with. As far as I know, all of my friends have subscribed to it* (Female Student: 2).

Given the classroom dependence on textbooks, it was somewhat surprising for the researcher to learn that there was limited access to standard texts, as some male and female students

complained that there were only a few copies available. The researcher immediately acted on this assertion to arrange, after consultation with the course coordinator, greater availability of the upper-intermediate level textbook "*English Vocabulary in Use"* by Michael McCarthy and Felicity O'Dell. This was recommended by the College of English and Translation at Al-Imam University to enhance the lexicon of the students, and interaction with the tutor, to attempt to develop their speaking and listening skills, so far as this is possible to achieve using text.

The DBR study had to be based on the university curriculum in order to meet governmental stakeholder requirements, and the chosen topics therein were used as discussion points in interactions using social media applications. The focus groups had to be repeatedly assured that although they were being taught in a somewhat different manner during the semester they would be addressing the institutional syllabus. Furthermore, they were told to check for updates on WhatsApp notifications and messages at specific times for instructions and updates on the project activity and progression, and to use Instagram to communicate and facilitate video and photo uploads to interact with the tutor and classmates. This latter instruction on uploads could actually be achieved through WhatsApp's synchronisation with Instagram. The apps facilitated tutor instructions and guidance on memorising new vocabulary, providing updates and announcements for the class, uploading videos to encourage student commentary and providing information for the researcher on the ease of use of the digital technology, especially in terms of speed and reaction.

The decision to incorporate elements from the textbook into Instagram was aimed at creating better connections between in-class activities and out-of-class Instagram discussions in pursuit of curriculum demands and standards. Instagram helped the students upload textbook materials,

interact with colleagues, and complete exercises before they were discussed in the next class. It was also expected that students would be able to find a relationship between topics based on the textbook and local or contextual events and norms encountered in their daily lives. On the issue of collaboration and cooperating, however, 60% of the male students showed a lack of enthusiasm for sharing answers or implementing local elements via Instagram or WhatsApp discussions. This is probably due to, according to the comments of two group members, the fact that they 'don't want to look stupid' if they get something wrong. When this came to light in group discussions, participants in both groups were advised by the researcher that Thomas Eddison did not fail 1000 times in his invention of the light bulb - it was simply an invention that took 1000 steps. This was just one piece of otherwise useless knowledge which the researcher had retained from a distant past, and it created some amusement in the group and they understood its meaning. Some photographs were also related to specific issues which carried tribal, city or regional sensitivities, reflected only occasionally but significantly by some students, and the female group tended to be averse to engaging with topics of a religious undertone such as music or women's dress during a video. These cultural issues were relatively easily diverted from, but considered to be of some significance as a barrier to learning.

One male student had the opportunity to learn English in the UK and found Saudi EFL classes largely in contrast to his experience in the UK. This, he complained, made it difficult for him to learn, exacerbated by the fact that other students mentioned lack of competency in the spoken language or an ability to engage with Saudi students, especially where the teachers were not Saudi nationals and spoke in accented English:

[Some Asian teachers], for instance, are very good at language usage and have a good command of vocabulary, but they do not deliver information properly. They do not know how to explain, [they] just read from the textbook (Male student: 7).

. . . and you will find the level of failure on his course is high, as information is not delivered properly and exams are not that easy (Male Student:10).

The tendency to blame diverse factors for failure to progress did not however prevent inward reflection by some students. The teaching may not meet their needs, and resources were limited and boring, but they were able to discuss whether they themselves were part of the problem. One claimed that if they had been taught by well-qualified teachers with 'effective' teaching-learning pedagogies, student performance would have improved when he was interrupted by another, suggesting he caused his own problems by not making enough effort or devoting sufficient time to studying. This highlights the unmeasurable variable of personality and dedication, which underlines so much research seeking cause-effect solutions to learning issues.

4.3.3 Context-awareness

Part of the discussion with the focus group prior to the activity-based part of the iteration related to ascertaining how much students knew about the contexts of spoken English; that is, collecting data on native speaker interactions in Saudi Arabia and during foreign travel. In Saudi cultural tradition, males are free to travel abroad, but females had to be accompanied by a male family member chaperone, at least until 2019. Only the one male mentioned above, who had travelled with his father, actually had that opportunity. The rest of the male group mentioned that there were some limited contextual elements used on other courses, such as writing, expression and speaking, but these were of little value to EFL learning. Seventy percent

of the female students indicated that they have few opportunities to write or speak about local events or national contextual issues:

> *There are [opportunities], but very few. Even when we are given examples [during such courses], all have English names, not Arabic ones (Female student: 12).*

One commented that only 20–30% of classroom activities were connected to the out-of-class environment, with another suggesting this could be enhanced by extracurricular visits to places where English is commonly spoken, although the tourist trade in Saudi Arabia is in the early stages of development. The discussion nevertheless stimulated a healthy degree of curiosity amongst the students about how the integration of mobile phone technologies, social media and Instagram could expand contextually based learning outside of the university. This resulted in a flurry of questions inquiring about their upcoming tasks, with enthusiasm observed from the change in students' facial expressions and their tone of voice. This observational finding suggests a keen interest in new methods of learning.

4.3.4 Experiences with mobile phones and Social Media Applications

The questionnaire indicated that virtually all students owned smartphones such as the iPhone, Samsung or Huawei, and were generally familiar with the different technological features of the applications available on their devices. They used their phones multiple times on a daily basis for lifestyle management and knowledge organisation. Although all of the participants said that they use these applications primarily to connect and keep up with friends, almost 80% indicated they use them for learning purposes. All had previously used the internet via the smartphone to access dictionaries.

One male student uses Twitter to follow an English teacher's account where he acknowledged learning benefits from vocabulary acquisition, as the teacher would tweet a word with its different meanings and use it in context to facilitate memorisation, learning and application. Evidently, teachers have considerable utility and value in out of class learning support, using the smartphone, where even the simplest of challenges were appreciated by learners.

Another male respondent stated he uses Telegram English - a website which joins learners to groups seeking EFL interactions, various groups sharing videos and clips and sharing information with other students. This is indicative of the kind of cognitivist exploration and learning which lends itself to autonomous vocabulary accumulation and interaction, which enhances learning. Several female participants also confirmed membership of the Cambly Application where knowledge could be exchanged and language practiced with peer learners. Although not a common practice in either gender group, interactive exchange on social communication apps was encouraging for the development of the collaborative aspects of this DBR. Learning and expanding one's vocabulary is for some already considered to be a social activity. Sharing new words and ideas via text, picture or video promoted motivation and enjoyment. There were no complaints about limited battery lifetime or storage capacity, as was noted in previous studies on these activities.

More male and female students, indeed virtually all with different regularities, commented that they would share photo and video captures on social media websites like YouTube, and in the pursuit of entertainment, indulged in interactive multiplayer mobile gaming. All in the focus groups were internet users, familiar with the university's Blackboard notification pages, and 80% of students already had Instagram accounts. There was regular use of WhatsApp by a similar

number, as well as email and texting. All also used their smartphones, at times, to make calls. Limitations on use were largely down to expense of internet connectivity, with 35% of male and 28% female respondents stating they would seek Wi-Fi Internet spots while at university or outside in coffee shops:

> *[Mobile phone Internet] is quite expensive. For example, I just opened Instagram on my mobile phone the other day, and it cost me SR12 [about $4] for about an hour browsing. So how can we use it that way? (Male Student:9).*

Some indicated that they had signed up for cheaper monthly cellular data packages, although they complained that the technological limitations of mobile phones on this network made for slower access to documents and downloads. Websites like YouTube are difficult to access through cellular data, so they prefer to use Wi-Fi to access the internet for faster and less expensive downloading at free access spots:

- *yeah, it [mobile phone Internet] is slow, and for example, it cannot access YouTube* (Female Student: 12).
- *When I access the Internet via cellular data, it is much slower than it is over Wi-Fi* (Male Student: 5).
- *The webpage appearance, photo display, photo download, and so on, are all better on a laptop than on a mobile phone* (Female Student: 8).

The freedom to use the smartphone is a considerable attribute for adherents of the digital life, and the student respondents expressed no particularly favourite place or time to access knowledge, the broad requirement being free connection at hotspots, cafes or home, even in bed before sleeping. Instagram was the favoured method of communication with people they already know, especially those abroad, or simply for 'wasting their time'. Only a few students in each group

indicated they would upload their posts to Instagram using their phones, with others preferring to wait to upload and download via home and university computers, then accessing the same via their smartphones. It is worth pointing out that such an insightful way of using resources and saving money correlates with what Herrington et al. (2009, p.134) would call a "blend [of] mobile and non-mobile technologies" to achieve a task.

4.3.5 Expectations of the use of mobile SM application for contextual learning

The questionnaire and focus group meeting showed that students are enthusiastic about investigating other methods of learning English using their smartphones and how Instagram could be integrated into their learning activities. Blackboard was really just considered a notice board rather than an effective learning tool, with one student commenting on the variety of interactive opportunities afforded by social media;

- *I really got sick of using any traditional in-class or online board [laughing]. I just do what is needed in a hurry [on Blackboard for example] and sign out… Instagram can be used anytime. You can access it even outside of the course's timetable and can even comment to people you do not really know. It is very comfortable to use* (Male Student: 5).

There was broad enthusiasm across both gender groups for the collaborative DBR task process, for using mobile Instagram to connect in-class learning activities to out-of-class contexts. There was a keen interest in general for learning opportunities 'on the go' and beyond the classroom.

Some students were sceptical about whether social applications such as WhatsApp and Instagram would provide them with real learning opportunities, and the researcher detected some ambiguity in attitudes toward their upcoming tasks, how they would work and their relationship with the

curriculum. In a subsequent meeting, the groups were taken, separately according to gender, to a university computer lab where a practice Instagram activity could be performed by way of example. Those who were new to Instagram signed up and registered their usernames and emails, and current 'members' had the option to use their existing accounts or to create new ones for study activities. Four female students chose to create new study accounts and to preserve their existing accounts for their personal communications; two others switched from their existing accounts to new ones after they had already started the task. Some students did not immediately add their classmates to their friends list on their own Instagram accounts, so were asked to do so via the Instagram 'Suggest Friends' option. Each of the whole focus groups became friends on Instagram before they were all invited to join the gender separated Instagram groups created for the DBE project.

4.3.6 Discussion of the initial learning design

In the beginning, complaints were raised by both groups that the standard textbook required for the course, and thus in great demand, was in short supply at bookshops. The alternative "*English Vocabulary in Use"* by Michael McCarthy and Felicity O'Dell was subsequently provided as a PDF to use on their mobiles two weeks later. The texts provided a foundation for understanding the syllabus requirements in preparation for mid-term exams, although a proportion of students indicated a preference for following a strictly guided path to learning a single text. This, in the judgement of the researcher, is indicative of the result of years of presentational learning - a dependence on a defined authoritative source of information geared to examination performance rather than competence. The content of the Instagram discussions, after the initial task was presented to the students, broadened the learning practice they would have to undertake, and no

doubt this caused some trepidation as a departure from their normal expectations. The expansion of learning beyond the classroom, incorporating contextual events and culturally relevant factors from their own lives and regions, was however met with considerable enthusiasm. There was a recognition of the inadequacy of class only learning in the pursuit of language competence, even beyond exam-passing imperatives:

- *I strongly believe that in-class only activities are not sufficient for us to benefit from, so it was a good idea to implement Instagram to enhance our learning* (Female Student: 5).

There was significant curiosity during the initial meetings about the nature of the materials they were required to create with their mobile phones and upload to Instagram, and how their collaboration on those materials could positively effect learning and exam success. One student, for instance, wondered why mobile phones would be incorporated into the course given his view that computers were more effective. It was explained how mobile phones, as well as Instagram, could create learning opportunities for them that are accessible anytime and anywhere, and he accepted that he was never far from access to his smartphone, with much nodding and smiling from the rest of the group on that point. The groups were informed that this activity would provide for more authentic language usage, as the photographs or videos they upload to Instagram were to be associated with some social occasion or event that occurred out of class, and had some local or cultural characteristics they could identify with or be informed by. Interactive discussion and guidance would be facilitated by the teacher.

The focus groups were largely unaware of the potential of Instagram faculties as tools of study for creating contextual learning experiences outside the classroom, but the meeting aided their

understanding of their role in the DBR to contribute to their learning. This was a new experience for all of them, what Herrington et al. (2009, p.134) describe as "explore: provide time for exploration of mobile technologies". The DBR activities and interaction encouraged students to explore the potential of their mobile phones for learning to later report their findings throughout the first iteration. The objectives and procedures of the Instagram learning tasks became clear during the meeting. Student requests for clarification were handled and answered with care so as not to suggest a bias presumption of value, while ensuring they were aware that it was their role to advise the researcher of any benefit derived. They were further advised of their need to cooperate fully, and if they were concerned this would not personally be possible, they were free to withdraw at any time without it effecting their course progress.

The value of the data gathering process in the first pre-task focus group meetings was the highlighting of the lack of authentic opportunities for language practice outside the classroom and unpredicted problems of access to textbooks. The teaching quality and methods currently undertaken in the classroom are ineffective and the students had clear opinions based on the competency of their instructors. Both male and female groups broadly welcomed the use of their beloved social media technology for learning and interventions, having previously not given any thought to the additional benefits from their ubiquitous use of devices.

4.4 Findings from the 'During-Task' Activities: The First Iteration

In Week two, before the task commenced, students were classified into lower and higher achieving groups based on their previous grade point averages (GPA). Social media (SM) application users, the overwhelming majority of participants, were also categorised into *active,*

average, and *low* users according to interactivity and experience. Students who just signed up for SM WhatsApp and Instagram applications were considered low users in this initial categorisation of SM application users.

A randomly-chosen group consisting of 14 students of each gender class was assigned to the First Iteration of the mobile learning task, consisting of both lower and higher achieving groups, as well as active and average WhatsApp and Instagram application users. They were given a timetable explaining when each should upload his or her own material to the SM application group, with more active users to post their threads before less active students. This, it was believed, would encourage less active students by example to communicate effectively through the applications. Those who did not upload material relating to the task were required to comment on that posted by others, and all participants were asked to provide a minimum of five comments for each participant's upload over the six-weeks of the First Iteration.

At the start of each week, three students were randomly designated from each group, or volunteered, to post photographs or short videos and to add captions, descriptions, or starter questions to the discussion board using their mobile phones, mirroring Herrington et al.'s (2009, p.134) design principle: "personalise: employ the learners' own mobile devices". Postings and interactions from the week were the focus of group discussions at the end of the week. This DBR strategy integrated the in-class with out-of-class learning activities and provided non-participants with opportunities to be included in the discussion. Moreover, in-class discussion was aimed at providing opportunities to connect textual SM interactions with classroom-based discussion. "mediation: use [of]mobile learning to mediate knowledge construction" and "prod*use*: use [of] mobile learning to produce and consume knowledge" (Herrington et al.,

2009, p.134). The First Iteration of the learning design lasted for six weeks (Weeks 3 to 8). Students contributed to the SM application group and collaborated during the first five weeks, providing three posts per week, while the sixth week was dedicated to a final discussion of the whole Iteration and stimulated recall sessions.

4.4.1 WhatsApp application observations

The WhatsApp application observations were undertaken to collect data from the development of learning relationships between participations and their perceptions of the social media mobile learning task and design. The observations enabled an assessment of student contributions, which aided the learning task design. Inter-student and learner-teacher communication was monitored, noted and evaluated. The study utilised the "*mobile discussion board observation scheme"* developed by Nah (2008). The times and places of student SM access for contributions and interactions were also noted and analysed.

It was noted that during the first week of this Iteration, some focus group members were reluctant to add some of their colleagues to their friends list, although they were all asked to add each other to their lists via the WhatsApp application "Suggest Friends" option. It may be tentatively concluded that students in such a traditional less-collaborative setting were not keen to share learning with each other, and it was not until Week three that all members added their proposed collaborators to their lists. One student, for instance, who had just signed up for Instagram application and was categorised as a low application user, complained that he could not find his classmates' posts, but he did not realise he needed to add all members of the group to his list in order to see their posts.

The SM interaction was subsequently divided into four categories: (i) familiarity of topics, (ii) task orientation, (iii) device used to contribute to SM application, and (iv) SM application usage. Students were allowed to choose any topic that had contextual characteristics, those which reflected the surrounding environment or focused on local issues.

4.4.1.1 Familiar versus unfamiliar WhatsApp application topics

WhatsApp observations by the researcher indicated that most threads related to the students' own contexts, such as their cities or villages. The subject matter consisted of tribal affiliations (*Qahtan*), landscapes, cultural folklore and dances (*Qasimi*), festivals, family gatherings and parties, and even incidents like floods. Such threads reflected the design principle of authentic contextual learning that mobile activities should have personal relevance and meaning. It was further evident from the contributory comments that the majority of uploaded materials were interesting to most of the group members, even though many of the uploads were not familiar to the whole group; they stimulated the reflection of the group members. Indeed comments on familiar posts tended to be fewer and shorter than on posts which increased awareness of unfamiliar Saudi contexts and were sometimes in Arabic rather than English, particularly regarding Eid celebrations (Figure 4.6). Short comments were complimentary in general, for example '*thank you, I like this video, it's beautiful'*. Notably, some female students addressed each other in English as "sister" or "honey", which are direct translation of what they would do in Arabic in their oral and informal communications.

Figure 4.6 Short type of SM application comments on familiar topics

In contrast, students elaborated enthusiastically with longer comments when they encountered threads that were deemed to be interesting or unique (see Capture 4.7). Such picture and video posts prompted questions and requests for more information on the content and location of events, occasionally expressing a desire to visit the places. Those who had uploaded material which stimulated such interest and interaction appeared pleased to provide detailed answers and contribute to discussions. It was promising for the results of this design-based project that such cooperation was occurring in a natural, unforced manner, in which all who read or watched would learn about their country in English.

In some interactions, as in Capture 4.7 indicating 13 comments, the discussion went beyond what is seen in the video to include the origins and uses of specific local terminologies and their

closest English translations of Arabic meanings. Students, for example, learned different dialectic words for "farms" reflecting different contexts. In terms of language learning, discussions such as those in Capture 4.2 comprised sentences that offered rich language learning opportunities for the students. For example, a student asked the uploading student: “what do you call these farms in *Dhahran* (a surrounding city)? Some people call it *Belad*, some people call it *Zorou* (local terms for terraces)” eliciting constructive responses. Another enquired about some water he saw in the picture and wondered whether it was a dam. English was practiced in a variety of manners, interconnected with Saudi contextual images - a major purpose of embarking on the DBR methodology.

Figure 4.7 Contextual Images

The majority of SM contextual interaction was task-oriented, focusing on the specified research platform-page, with collaboration on context-based topics to meet the requirements of the learning task. Occasionally, casual or non-task-oriented topics conversations on the research page focused on areas such as daily living activities, interests, and hobbies. This is indicative of a growing familiarity and comfort with broader interaction in an educational context, which adds value to learning in a design-based programme.

4.4.1.2 Mobile phone vs. laptop/PC contribution

The WhatsApp application shows whether a thread was posted through a mobile or non-mobile device. The total number of threads uploaded via the mobile phone was initially low (Figure 4.1), especially after the three weeks of the First Iteration, with students having indicated in the pre-task meeting that it was slow and time consuming. They therefore tended to use a laptop or PC to upload material and access it via SM.

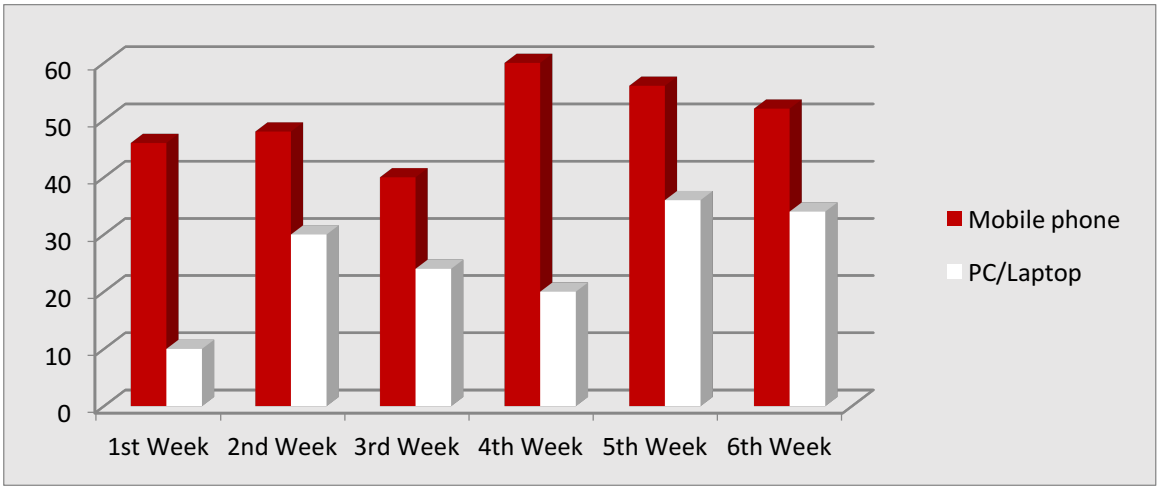


Figure 4.8 The total number of male uploads and participation on both mobile phone and PC/laptop: First Iteration

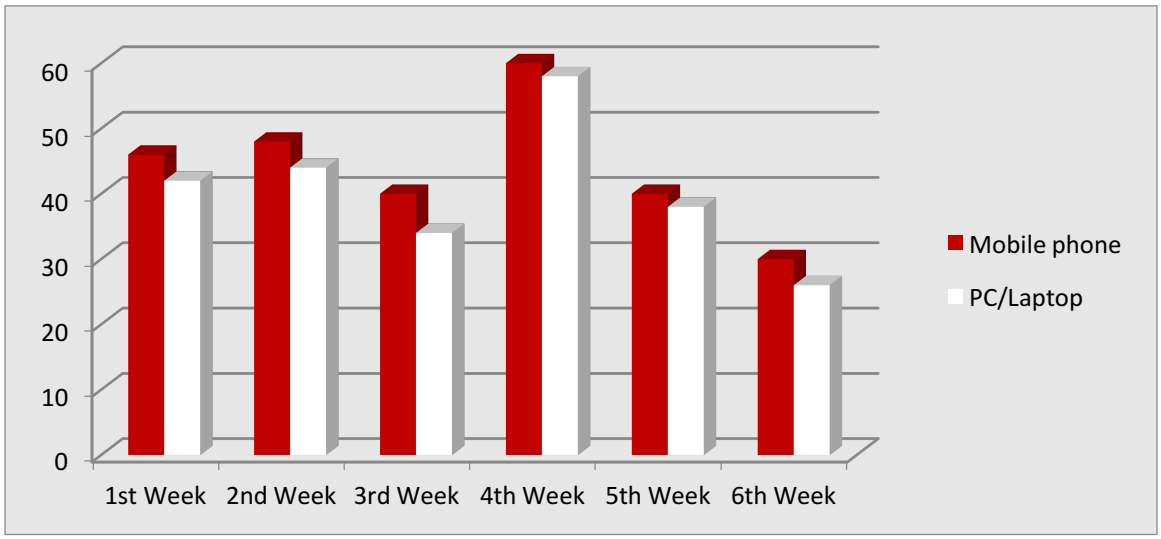


Figure 4.9 The total number of female uploads and participation on both mobile phone and PC/laptop: First Iteration

4.4.1.3 Casual versus Structured Usage

As the mid-term exam approached, around the sixth week of the First Iteration, student SM's interaction dramatically increased, particularly a few days prior to the exam. They were sharing ideas about the exam, making inquiries, and asking for clarification from their teacher rather than focusing on the DBR project task. After the exam, those who had failed to attend used the project page to apologise through private messages and appeared to seek to compensate for their absence by more active involvement in the DBR programme of interaction. Three male students asked for extra tasks believing it would compensate for the missed marks. That was not forthcoming.

The progression of the project activity led to greater levels of discussion and collaboration on casual exchanges of knowledge, information and tasks which had nothing to do with the formal DBR course, especially at the weekend. Casual topics included jokes, sport news, funny or interesting photos or videos, and so on. Given the researcher was on the friends lists of the participants, he was occasionally asked to contribute to the casual discussions and as such, an atmosphere of informal and friendly communication between the students and the teacher was generated which enabled guidance to be more readily received. Saudi students are certainly not accustomed to this atypical collegial student-teacher relationship. This is discussed in more detail in the next section.

Interactive commentary on the DBR task and relevant topic threads was most active on weekdays, particularly in the evening or after classes, for the majority of the students. Others did not devote specific times or days to their WhatsApp contributions, some commenting on all of the weeks' posts in one sitting before the in-class discussion. It is possible to conclude that such students saw the SM activities as assignments rather than as a communicative activity.

Nevertheless, communication and cooperation in learning stimulated interest in EFL education where the students, with direction and guidance, felt they could learn what was necessary from the curriculum using a different medium over which they were broadly in control. The uniqueness and unfamiliarity of the student-chosen uploaded learning materials played a major role in eliciting meaningful and learning-oriented language outcomes. Although discussions on casual topics (Capture 4.3) were not as rich and meaningful as discussions of task-oriented topics (Capture 4.4), students had the opportunity to pragmatically involve their casual life in task-oriented collaboration. In other words, they had more opportunities to practice English.

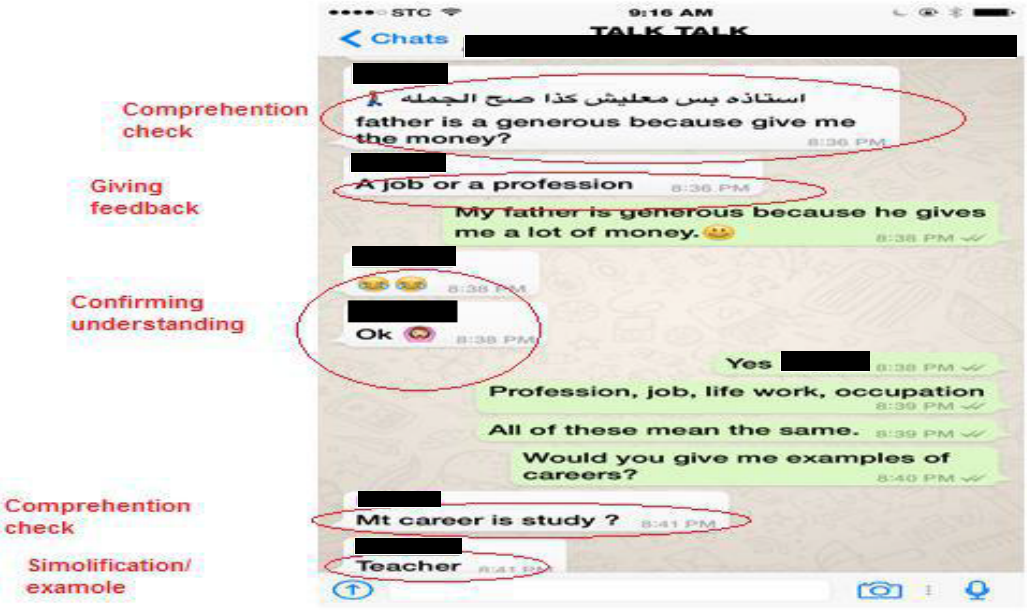


Figure 4.10 Student collaboration on a casual topic: First Iteration

4.4.2 Stimulated Recall Session

The stimulated recall sessions were conducted during and at the end of the First Iteration (Weeks 4 and 8) with eight randomly chosen students from each focus group. As for the learning task, the five-student sample consisted of students from both lower and higher achieving groups as well as active and average SM application users. The sample also included both uploading and participating students. The sessions were conducted with students on an individual basis, during which each student spent 10 to 15 minutes with the researcher watching his contribution to the SM application and reflecting on it. Each student had the opportunity to watch the conversation and notice his or her own problems or interesting elements of language that might have included cultural or contextual characteristics. The researcher facilitated the students' observation of their

work and provided clarification or explanations when needed. In addition, the discussion served to revive the students' memories of the process of the WhatsApp application's conversations, and the strategies they had used. Sessions were voice recorded and then transcribed, and notes were taken throughout the sessions.

The stimulated recall sessions enabled students to evaluate and reflect on their learning experience, provide their evaluative judgement of the DBR learning project, and activity engage in the use of greater collaborative interaction via mobile accessed. They particularly enjoyed the incorporation of contextual norms from their own environments into their learning, and indicated that they had been educated by their peers about surrounding places and cultural aspects with which they were previously unfamiliar. In a male student's words:

> *After [a student] uploaded a video clip about his hometown, I visited it the next day. I had no idea about it [the hometown] before, and I did not expect it to be like that. I actually thought [he] fabricated the video clip [laughing] so I decided to go there* (Male student: 14).

SM interaction helped them to become familiar with their classmates more quickly and effectively than was facilitated through Blackboard, leading to them making new friends, especially amongst those who shared mutual interests:

> *and if I did not have SM the application, I would simply attend the lecture and leave without getting to know anybody or even greeting anybody, which is the case on the other courses. So it's been my personality, not eager to know everybody* (Male student: 7).

The same student reported that he used to communicate with his outside of class friends through Telegram or Twitter, but the WhatsApp application was more user-friendly and interactive and had become the main platform for contact in his friendship and family group.

Although they understood and appreciated the role that mobile social media applications played in contextualising the learning task, the students listed some limitations that they encountered. These included the lack of good network coverage, especially in remote areas; the intrusion of advertising on the learning platform, and the reverting to the use of one's first language at certain times when understanding was unclear. Some preferred browsing social media on their computers rather than their smartphones due to the small screen size and keypads of mobile devices. Unlike the fast Local Area Network (LAN) internet connections for computers, slow internet connection for mobile phones was also a limitation for some students. At the time of the stimulated recall sessions, a wireless LAN had just been installed across the university campus, but none of the students interviewed were aware of this, and having been informed, they passed the news to their contacts upon logging in to the new free wi-fi. Generally, apart from their technical complaints and the advertisements, the students in the stimulated recall sessions reported that mobile SM effectively connected in-class activities with the surrounding environment in a way that allowed them to integrate contextual elements of interest. It was a popular way to learn, interact, collaborate and make friends.

4.4.3 Analysis of WhatsApp application discussion

The analysis of the SM application discussion over the First Iteration focused on three major aspects related to the research: (i) language use and content, (ii) student-student and student-teacher communication, and (iii) usage patterns and behaviour.

4.4.3.1 WhatsApp application language use and content

The students generally participated and commented on each other's SM posted tasks in English, particularly when a thread was initially posted in English. In contrast, there was a tendency among students to use Arabic while collaborating on non-task-oriented or casual topics. However, in their use of Arabic, most of the students interviewed reported that collaboration in English was not as much of an obstacle as it might have appeared from the analysis of the social media application discussion. Arguably, therefore, English was seen as a subject, a language of instruction, whilst their native Arabic was the mode of casual or personal communication on the DBR page.

Students would demonstrate that they could use richer contextual vocabulary, producing more topic-continuing contributions and responses to questions with greater expressiveness occurring when, for example, the uploading student and those who commented thereon came from the same place represented in the upload. This suggests greater interest stimulated, or more of an ability to associate with and elaborate on topics that reflected their own environment or people, perhaps a sense of belonging and pride. Other indicators of the influence of context on student SM contributions included the use of more localised terms and expressions, often difficult to translate

into the equivalent English, leading to an explanation which incorporated both English and Arabic words in the same sentence.

Students who had previous experience with social media networking outperformed their classmates who were new to SM applications, characterised by the quality and appropriateness of threads or comments, especially during the first few weeks of the Iteration. However, a number of high-achieving students, despite such lack of experience, contributed rich contextual material of commensurate quality. The analysis of SM application language use and content can be categorised into contextual and non-contextual language usage (see Table 4.7).

Table 4.4 Types of language Usage Based on Instagram Interaction: First Iteration

Type of language		Characteristics
Contextual language	*Task-oriented*	• The outer context was highlighted • Discussion met the task requirements • Reflection on in-class activities • Mostly timed and scheduled (weekdays) • Mainly in English
	Non-Task-oriented	• Both task and learning-related topics • Low teacher involvement • A mix of Arabic and English • Mostly non-scheduled (weekends

Non-Contextual language	*Pragmatic language*	• Discussion focused on textbook-related tasks • In situations like: asking questions or for clarifications, asking or offering; help, drawing attention, etc. • Used symbols to express feelings • Basically found in private messages
	Casual language	• Casual topics were discussed • Used fun and humour • High teacher-involvement • Mostly non-scheduled (weekends)

Contextual language was categorised as task- and non-task-oriented. The task-oriented language was primarily meant to meet the requirements of the set activity, with students following instructions on procedure and contributions to SM as scheduled. The discussions were a reflection on the uploaded materials that represented the student context, differing from one student to another, based on how each individual student interpreted the task. For example, some students tended to elaborate more on the content, either inquiring after or triggering further contributions of information that enriched the discussion. Other students seemed to 'go through the motions' of instruction compliance with the three posts per week needed, aiming to demonstrate to the teacher that they were making a contribution to the discussion regardless of its content. Non-task-oriented discussion was apparent in the textbook-based and classroom-based discussion that involved student contributions to the in-class activities and enquiries about specific lessons, generally conducted in a mix of Arabic and English, relatively spontaneously and unscheduled.

The students had the opportunity to develop their communicative competence in language learning and use through the negotiation of meaning as they shared information on both contextual and non-contextual topics. They contributed to textbook-based activities, enquiring or asking for clarification and answering questions in situations where the specifics of the DBR activity context were not highlighted. Some students either confirmed or corrected each other's comments in a way that allowed more language practice and collaboration to happen.

Non-contextual language was classified into pragmatic and casual languages. Most pragmatic language discussions were learning-related but not necessarily contextual. Students frequently communicated with the teacher on assessment and attendance matters, either on the public SM wall or via private messages. There were a substantial number of posts and discussions on casual topics with each other regarding social plans and events. Students would upload humorous materials such as videos which appeared to show pain being caused to the subjects thereof, especially at weekends. Occasionally, the teacher would be asked to join these discussions, establishing a friendly and informal relationship, which is profoundly unusual in the conservative Saudi context. Casual discussions were mainly in Arabic. Cross-cultural Arabic expressions of friendship and pleas would be translated into English, for example *Brother, Allah (God) Help you, Make Dua'a (pray for me), hhhhhhhhh* (laughing), to name but a few.

4.4.3.2 Student-student and student-teacher WhatsApp application communication

In student-student communication it was noticed that students tended to use complimentary short comments, particularly at the beginning of the task, but as closer interaction, even

friendship developed with their classmates on SM, these became more sophisticated and reflective. This similarly occurred in student-teacher communication, with initial caution evolving into trust in the pedagogical relationship, but never reaching an unacceptable level of familiarity.

In Arab, and particularly Saudi contexts, students are expected to exercise high respect for their teachers in ways that may hinder them from expressing their opinions or even communicating effectively with each other. This was apparent in the initial reticence to complain in the pre-task meetings. den Brok and Levy (2005) argue that Asian teachers are more dominant than their peers in Western contexts, which promotes the traditional presentation-reception process of knowledge transference reflected as being unsuccessful in Saudi EFL outcomes.

The DBR design of this research necessitated that such barriers be removed in this study, and so a new relatively informal mode of teaching-learning interaction was encouraged in the nature of mobile and out of class instruction. This was critical to the effective adjustment of the research design through the eliciting of accurate feedback and reflection from the students on the whole learning task. The setting up of the designated social media page helped students to create a social community that included family members and a number of close friends and promoted extracurricular student-teacher interaction. The teacher would be considered as an equal member of the group without absolute authority or dominance, and no student 'took advantage of' that new found freedom to share their views.

The *online discussion board observation scheme* (see Appendix F), in which observations of interaction and content types were noted, was used to calculate the number and type of student - student and student-teacher SM application interactions (see Tables 4.6 and 4.7).

Table 4.5 Types and Numbers of WhatsApp application Discussion/Messages: First Iteration

Discussion/Message Type		**Number of posting**
Task-oriented discussions/ messages	Giving opinions	19
	Supporting opinions	20
	Expressing agreement	10
	Expressing disagreement	4
	Giving information	38
	Asking questions	51
	Providing answers	14
	Asking for help	7
	Giving instructions	17
	Providing advice	2
	Expressing difficulties	5
	Expressing thanks	69

	Expressing likeness	41
	Expressing emotions	9
Non-task-oriented Discussions/ messages	Giving opinions	3
	Supporting opinions	2
	Expressing agreement	3
	Expressing disagreement	1
	Asking questions	1
	Expressing thanks	3
	Expressing likeness	4
	Expressing emotions	10
	Expressing difficulties	2
	Greetings	8
	Encouragement	3
	Making jokes and fun	36
	Giving praise	10
	Giving information	8

Table 4.6 Numbers of Male Student to Teacher/Teacher to Student SM application Interactions: First Iteration

WhatsApp application public wall		SM application public wall	
Student to student	*Teacher to student*	*Student to teacher*	*Teacher to student*
69	56	28	21

Table 4.7 Numbers of Female Student to Teacher/Teacher to Student SM application Interactions: First Iteration

WhatsApp application public wall		SM application public wall	
Student to student	*Teacher to student*	*Student to teacher*	*Teacher to student*
76	46	28	31

These tables illustrate the extent of the interactive discourse in numerical form between students and the teacher-researcher, as the learners used different strategies to clarify and enhance their language practice and collaboration. Providing information and supporting opinions were the most frequently used strategies, and these also led to other strategies such as expressing thanks and like for threads and comments. Such strategies, as summarised in Table 4.10, aid understanding of the extent of the language learning topics and interactions that took place during the First Iteration.

4.4.3.3 Usage patterns and behaviour

Before using the social media research page for out-of-class interaction, each student was advised that he or she was free to use either their current SM application account for access or create a new one for the study. Stockwell (2008) suggests that young students may not be keen to share their personal space on social media with anyone other than their close friends. After all, the accounts

were created in order to establish the group, and so four students chose to switch from their current accounts to new study specific ones. Interestingly, only four male students out of the group members put their actual photograph on their profiles. Of the male students, only nine students signed up with their real names; the other five students signed up with nicknames.

The students were broadly diligent in contributing to the task, as scheduled in accordance with instructions. A few students failed to meet the timetable, but eventually all uploaded material. No specific time preference for contributions to the site was identified, although the majority of discussions took place after class, particularly in the evening. Casual threads and discussions were primarily active over the weekends or at times when students did not have concerns with learning-related issues such as exams.

4.5 Summary and Conclusion

The findings from the First Iteration of the mobile language learning task, based on the questionnaire and focus group interview data, showed that students were acutely sensitive to the quality of their learning in the traditional Saudi classroom framework. Their perception was that that they were being lectured at, with little opportunity to contribute or seek clarification. This remained broadly so despite the 2016 Vision 2030 initiative to introduce technology into the classroom; the researcher's observations and assessment of the students' comments show that little has changed. This provides support for the introduction of design based learning to facilitate contextual study and incorporate it into the student lexicon of learning to improve outcomes and their economic futures.

The use of social media in the design of extra classroom learning and to stimulate cooperation, collaboration and inter-communication, was enthusiastically adopted by the students, aiding the building of interactional relationships which the students indicated promoted their learning. As the primary stakeholders in the education framework, the student input marked a high degree of benefit afforded by the design-based research process, which can be adapted to a lesson planning process. It has been noted from the literature review that studies tend to explore technology and specific issues and produce results which are indicative of the value of change. In the context of this research programme, the DBR project has provided the foundation for a new way of teaching and learning practice in the Saudi context, and it evidently raised motivation levels and involvement among the EFL students.

The task helped students not only to interact with the outer context and integrate that with the in-class activities, but also enabled them to produce their own learning materials meaningfully and authentically. They interacted with the teacher and expressed their ideas more freely, creating an informal and friendly community of practice in which all members, including the teacher, were equal. Initial observations showed that some students were reluctant to communicate with each other and with their teacher, and were not keen to use actual representations of their identities like photographs or real names. This was largely overcome within a relatively short period of time and involvement. This is an issue discussed in more detail in Chapter Six. In Chapter Five, a discussion of the adjustments made to the learning design, before the Second Iteration commenced, is provided. The discussion includes the rationale for incorporating connectivism into the Second Iteration, as well as an overview of the learning theory. The findings from the Second Iteration are then presented.

5 Chapter Five: Findings: The Second Iteration

5.1 Overview of the Chapter

This chapter presents the further findings from the 'during-task' activities of the Second Iteration, affirming the rationale for the adjustment of the learning design, based on student reflections during the First Iteration. It will seek to countenance the theoretical design structure of Siemen's (2005) connectivism as a theory for the digital age through findings from the social media observations, feedback and the analysis of students' discussions. Student strategies for learning, understanding and conveying meaning and maintaining context appropriate social behaviour in SM interaction will be considered in task performance, and post-task will be the focus-group discussions. Their reflections, evaluation and attitudes toward the use of mobile SM in their learning will direct the final discussion on shaping the design principles for mobile language learning.

5.2 Adjustment to the design

An initial data analysis was carried out during weeks nine and ten in the break between the two iterations, with feedback and reflections from the First Iteration considered and the design principles for mobile learning outlined by Herrington et al. (2009), in Table 3.2, revised. Adjustments were made for this second phase of the in-task study to correspond to the design principles affected by the first iteration of data collection.

Design Principle 3: ***Explore: Provide time for an exploration of mobile technologies:***

Students generated new ideas or thoughts regarding the use of mobile SM, which the researcher had not anticipated, in the First Iteration, for example the value of the email facility of the application as a tool for the notification of task development. Some students found it more effective than checking the SM application itself via an internet browser or mobile application. They checked their emails more frequently than the SM site itself, and were proficient at accessing information online, which best suited a variety of strategic needs such as cost and speed. This was particularly useful in the application of their personal communications devices to learning activities, developing skills of adapting between facilities and channels, and it suited a greater diversity of use and needs. There was clear feedback that indicated that students were keen to learn about the educational potential of their devices, rather than the technological characteristics, which were simply there to perform the primary purpose of communication and access. The design principle utilised in the second iteration analysis could therefore be adjusted to: ***EFL students need to recognise the educational potential of mobile technologies or contextual language learning.***

Design Principle 5*: Whenever: Use mobile learning spontaneously:*

This design principle was unintentionally contravened in the planning and practice of the First Iteration. It was noted in the feedback that 'scheduling' a timetable for each student to contribute to the SM task was not particularly effective, save perhaps as a deadline. One student complained that he had been ready to upload his video clip contribution several days before 'schedule' but thought he had to wait until the designated time. This detracted from the pleasure of finding the resource and deprived contributors of the opportunity to comment and move on more speedily.

Another was asked during a focus group discussion about the time of the incident represented in his video clip. He replied that his uncle captured it for him earlier than his scheduled uploading time and he felt he had to hold back until the due time. This made the post somewhat outdated and less spontaneous for collaboration because he felt the relevance had passed and was superseded by new events. Essentially, the best goal scored in the current set of football matches was replaced by a better one the following day. The motivation to collaborate on such topics may therefore have been undermined by a 'learning timetable' which detracted from the principle of spontaneity.

As a result, the scheduling of SM contributions was removed as a research practice in the Second Iteration and students were encouraged to post their materials whenever they had them ready or whenever they had something worth sharing. Each participant in the Second Iteration was only required to post at least one contribution throughout the first five weeks of the Iteration, although they were encouraged to do so quickly rather than leave it to the end to fulfil this obligation. As a result, some students uploaded more materials than required, and discussion of such materials was more authentic and topical than some of the First Iteration discussions. This finding is discussed in more detail in Section 5.4.1.1.

Design Principle 9*: Personalise: Employ the learners' own mobile devices*:

The learning design in the First Iteration required all students to use their own mobile phones regardless of their functionality or ability to provide effective access to SM applications or the internet in general. In most cases, students had several devices that they used interchangeably - their older devices for normal use in calls and texting and newer models for SM tasks, whether

educational or social. They suggested that internet-based mobile phones and paid Subscriber Identification Module (SIM) cards should have been provided for the study, to allow for the use of mobile access that they believed would inform the design or meet the requirements of the tasks. Evidently in a learning context, organised as a part of their curriculum study, students should have the opportunity to decide which mobile phone technology meets their requirements. In the absence of institutional cost considerations, which is an unlikely event, initiatives should provide students with technological mobile innovations that could improve their learning outcomes.

Universities have installed fixed computer technologies, but it is beyond expectations that they should provide mobile phones. Nevertheless, the university has installed a wireless LAN network across the campus and a mobile Blackboard for its students. Devices such as the iPad have also been provided in some classes. This step was preceded by training sessions held by the Lab Center for both students and academic staff, although at the time of the study, students have not had the opportunity to use such devices on any of their courses. Hence, the design principle was rewritten as:

EFL students may be provided with mobile devices of their own choice that suit the learning task, or at least the infrastructure to use their own without incurring additional personal costs.

Design Principle 11*: Produce: Use mobile learning to produce and consume knowledge:*

A distinction is made between "textbook-based knowledge" and "contextual knowledge". Students were keen to develop a better understanding of the textbook in order to pass the exams, and so they suggested that SM should include "core" lessons from the textbook, requiring

everyone in the group to collaborate on their exercises. This strategy, they believed, would make it easier for absent students to review any lessons they missed. They reported that the incorporation of textbook-based materials into SM interaction would allow the students to enquire about different aspects either individually or in groups. On reflection, therefore, the researcher amended the plan for the Second Iteration to include both contextual and textbook-based knowledge through SM collaborations. This enabled improved engagement between in-class textbook-based activities and the outside contexts with social media collaboration through meaningful tasks, enhancing the students' knowledge acquisition and motivation. As a result, the pertinent design principle was adapted to: ***EFL students should be able to produce and consume both curricular and contextual knowledge, and to engage between them effectively.***

5.3 Introduction of connectivism and implications of framework into the design

In this section, the theoretical framework outlined in section 1.8 is considered in terms of its implementation for the purposes of the mobile assisted language learning (MALL) connectivism in the current study. The principles related to communicative language teaching (CLT) are substantially intertwined with connectivism learning theory (Fenton and Terasawa, 2006), particularly collaboration whereby "two or more people learn or attempt to learn together" (Dillenbourg, 1999, p.1). Dillenbourg (1999, pp.1-2) expands on his definition, asserting that 'two or more' may be interpreted as a pair, a small group (3-5 subjects), a class (20-30 subjects), a community (a few hundred, or thousands of people), a society (several thousands or millions of people) ... and all intermediate levels. Learning is described as following a course, problem

solving and practice, conducted interactively, whether in person or computer-mediated, simultaneously or at different times (Dillenbourg, 1999, p.1-2).

This has been the nature of the study in this Design Based Research project, and the principles of connectivism and MALL rely heavily on group work and collaboration between students. It enables students to construct their knowledge and new experiences by working and interacting with their peers in context-based activities, discussing their learning processes and techniques as they gather and share information and knowledge, and explain experiences. This produces a range of benefits, including i) academic, ii) social and iii) psychological (Paintiz, 2001).

These are reflected upon in the consideration of connectivism as a separate learning theory, or a sub-genre of constructivist philosophy, in the development of pedagogical practices to develop student learning. The academic benefits of collaborative learning are that it promotes critical thinking and develops oral communication skills through discussion and debate, as students clarify and justify their ideas and negotiate meaning (Marra, Moore, and Klimczak, 2004). They are stimulated to explore new experiences, test hypotheses and evaluate their strategies through interaction with their peers (Lai and Lan, 2006). The teacher is no longer the sole, even primary, source of knowledge and information (Painitz, 2011). This is a constructivist approach whereby students have a more pronounced level of control in the classroom, increasing positivity toward the subject and motivation to stay on task (Kim and McDonough, 2008).

Social benefits include the development of social and communicative interactions with both peers and teachers (Weinberger, 2003). Interpersonal relationships in an education setting are imbued with a sense of responsibility to each other, a desire for the success of others as well as

oneself, given that learning is not a competitive sport (Jeon-Ellis, Debski, and Wigglesworth, 2005). Situations, problems and potential solutions are viewed from the diverse perspectives of others, increasing camaraderie and assistive networks, with evolving skills of leadership, an increase in self-confidence and esteem, and reduced anxiety in the learning environment. Collaboration becomes a method of contributing to the learning of peers and seeking assistance for oneself outside of the instructor's input and influence, enhancing the diversity of knowledge gained (Painitz, 2001). It is a psychological improvement in the student learning process, as well as linguistic (Keefer et al, 2000). This is fundamental to the DBR programme of this study, and the evidence of the First Iteration is that students found greater satisfaction in their EFL learning with an enthusiasm reflected in collaborating with colleagues in contextually based activities, which supported the curriculum demands.

The involvement in authentic contextual tasks promoted the communicative needs considered essential to the students' sense of involvement in their learning, using the target language as a tool in real situations of information searching and sharing. Evidence of psychological benefit has been revealed in the feedback and observations, such as engagement with the programme and commentary on the learning of others which enhanced their own. Gratitude expressions, as noted in the First Iteration, reflect this effect in the sharing and learning of new terms, practices and ways of conveying information, and a sense of achievement and personal fulfilment follows (Shneiderman, 1998). This is aided by the facilities of mobile software for web access and social media platforms, enhancing the range and diversity of the types of resources hitherto not available to learners, and indeed until relatively recently to Saudi students in the traditional pedagogical framework. This has been a goal of this study: to show evidence of value from the

point of view of the student for learning to be undertaken when convenient to them, albeit under the direction of the research programme requirements. The time and space of the traditional classroom is not eliminated as unnecessary, but simply supplemented.

Herein lies the basis for the analysis of specifically connectivist principles in the Second Iteration and its contribution to understanding the way students learn, as many of the features that will be described have already been adopted in the DBR programme of the first stage. These include the implementation of social media facilities to advance collaborative behaviour, sharing of knowledge and the acquisition of information from connectivity to non-human resources (Siemens, 2005). Siemens asserts that connectivism differs from more traditional educational theories in a manner which emphasises the accumulation of knowledge through the medium of technology, which requires adaptation and change in line with digital developments. This part of the research will seek to determine whether connectivism is a separate learning theory for the digital age that provides a more theoretical background for solid and practical design principles in mobile language learning. The First Iteration was viewed as a starting point to test the applicability of a student-centred approach, as well as mobile SM application, before applying the relatively novel theory through the Design Based Research programme, which has the broader potential for developing a new learning process both formal and informally. This iteration will expand on the positivity of the results from that stage of the research project.

5.3.1 Implications of connectivism

Siemens' (2005) connectivist learning theory is critically examined in the Literature Review chapter. The adoption of digital technology was utilised in the design of interactive, collaborative learning materials in the iterations of this DBR project to examine how it

applies to changing the learning methods of EFL students. Ally (2008) elaborated on the principles of the theory through the steps to be considered in learning practice modification, which are:

i. students are to be enabled to be more autonomous and independent in their freedom to access and research information via the web in a networked learning environment;
ii. knowledge changes rapidly and learners must develop skills of evaluation of information, abandon what is outdated and be up to date with current developments, requiring active networked participation;
iii. students must be able to connect with others, and express and share different opinions via a mobile learning network;
iv. students should gain knowledge from diverse sources through learning delivered by different technology interfaces, and
v. locate and research new information on a continual basis to promote authentic and experiential learning.

Guder's (2010) study, for example, investigated how librarians managed the delivery of knowledge sources, finding connectivist practices in the organisation of their work. Table 5.1 sets out behaviours of value to the conduct of the current study and student practices.

Table 5.1 Librarian Practices and their Reflections on Connectivism, from Guder (2010)

Librarian behaviour/practice	Reflection on connectivism
1. Instructors invite librarians to run training sessions with their students.	A user-controlled network is where the real learning takes place.
2. Both direct-instruction (teacher directed) and student-centred learning are practiced.	Learning takes place inside (face-to-face) and outside (via technology) the classroom. Student-centredness requires students (not the teacher) to decide what is important.
3. Library users search for information through various networks and library databases.	Students make their own networks of information and make connections where they see fit.
4. The need for a librarian is determined by the user.	The need for the teacher is determined by the student.
5. Library staff has a diversity of both backgrounds and opinions.	Learning and knowledge rest in the diversity of opinions.
6. Librarians are well connected to the network of users.	The more connections, the more diverse the knowledge.
7. Library resources are catalogued and easy to find.	Knowledge in a database needs to be connected to the right people in the right context.
8. Libraries utilise social networking technologies to help users obtain information.	Nurturing and maintaining connections is needed to facilitate continual learning.
9. Library catalogues and searching strategies enable users to discover relevant materials.	The capacity to know more is more critical than what is currently known.

5.3.2 Guidelines of Connectivism for the current design (Second Iteration)

The design principles for mobile learning, based largely on Herrington et al.'s (2009) framework of principles, was adjusted, as noted in the conducting of the data collection in the

First Iteration, based on participant feedback as the activities progressed. This enabled the researcher to reflect, in the short period between iteration-stages, on the further application of connectivist social networking into the Second Iteration. Indeed, it was a natural progression of the study programme. Table 5.2 provides the rationale for embedding connectivist guidelines into the Second Iteration in order to examine its cogency as a learning theory.

Table 5.2 Guidelines of Connectivism for Mobile Language Learning: Second Iteration

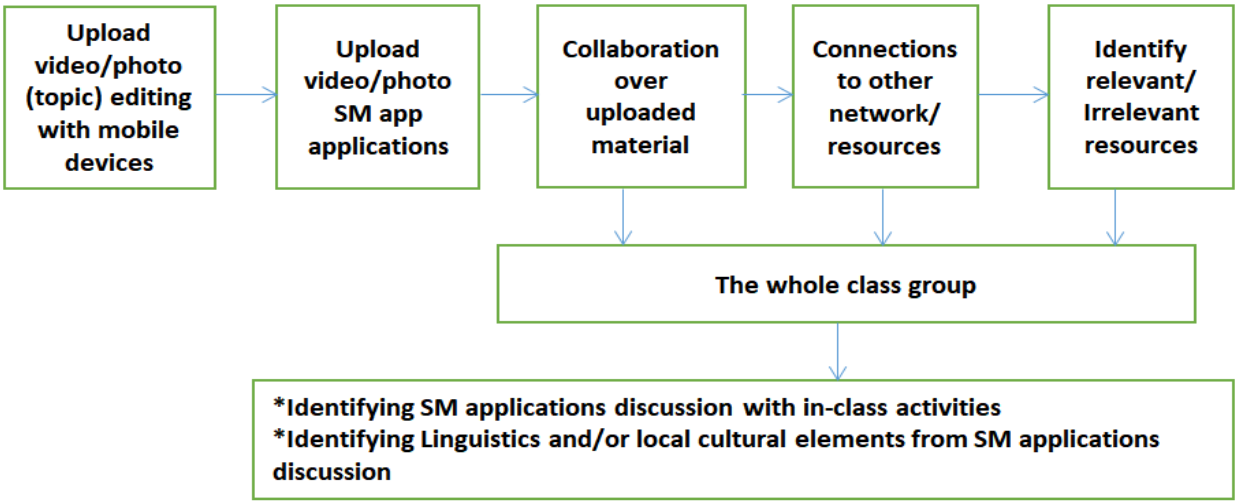
Principles of connectivism	Justification	Guidelines
1. Learning and knowledge rests in diversity of opinions.	•Students came from different backgrounds. •Students were already connected to different networks.	Debate and argument in students' SM application discussions should be encouraged. Diversity of students' backgrounds and contexts and uploaded materials should be highlighted in the discussions. Different sources of information should be maintained, e.g., students' other networks, Wikipedia, websites, online dictionaries, etc.
2. Capacity to know more is more critical than what is currently known.	• Students needed to be familiar with the best tools/sources of the needed information.	• Social networking and social media are not necessarily good sources of information by themselves. • Social networking and mobile phone access should provide better access to multiple sources of information.
3. Learning may reside in non-human appliances.	•Students needed to seek knowledge from sources other than the teacher to promote student	• Context is the major source of information for the task; the learning course and the teacher facilitate learning.

	centredness. •The learning community (students) should understand their task as knowledge generators. •Learning occurs inside and outside the classroom.	•Social networking and mobile phones are tools to connect with the context and to process information about it with other group members. •The teacher is a member of the network who may help and even learn from other members.
4. Nurturing and maintaining connections is needed to facilitate learning.	•Students needed other "external" networks and connections with similar interests.	•Students are encouraged to connect with other people outside the network to learn more. Other members may belong to the same context. • Inner connections or group members are primary sources of information that need encouragement. • Outer connections are additional sources of information, not members of the learning group, i.e. do not participate in the learning task.
5. Information is rapidly changing and increasing, students need to abandon old and unimportant information and learn new and important information.	• Contextual knowledge is constantly changing and varying from time to time and from one location to the other.	• Information related to students' contexts should be constantly updated. The updating process should be highlighted. • Students should collaborate identifying updated vs. outdated and/or relevant vs. irrelevant information. • Students should pragmatically distinguish between curricular and contextual information.
6. Knowledge in a data base needs to be connected to the right	• Students need to verify appropriate sources of information, e.g., people vs.	•The teacher is not the only source of guidance/ information; students/ contexts

people in the right context.	online resources. • Students need to have the skill to organise information according to its priorities.	themselves can provide more valuable information. • Social networking, e.g., SM application, should help students organise information and provide easy-to-use categorisation of different resources. • Pragmatism of categorisation: students should be able to distinguish between course related and non-course related knowledge. • Mobile social networking should connect to other networks to identify and refine authentic/ contextual sources of information, e.g., news.

Inspired by the adjusted design principles and guidelines of connectivism, the Second Iteration followed the learning scenario illustrated in Figure 5.1 below:

Figure 5.1 Task scenario of mobile language learning activities: Second Iteration



5.4 Findings from the 'During-Task', Second Iteration

After the initial data analysis from the first stage of the study, and the subsequent adjustment to the current design in weeks nine and ten, the Second Iteration commenced. The students remained classified in lower and higher achieving groups, based on their mid-term test results, and as active, average, and low users according to their social interactivity during the First Iteration. In the reflection process of weeks nine and ten, the researcher decided to include a randomly-chosen group consisting of 15 students assigned to the Second Iteration. The group consisted of students from both lower and higher achieving groups, as well as active, average, and low SM application users. They had not been involved in the First Iteration. This strategy aimed to elicit feedback from new participants regarding the new task, and to provide opportunities for non-participant students in the First Iteration to generate input into the learning programme.

In the second interaction, no schedule was set for participants to upload material to the SM group. They could post when they wanted and uploads and comments were unlimited, but they were required to participate with some regularity in the six-week timeframe. They were asked not to suddenly decide at the end that they should be doing something:

a) They should post photos or short videos, add captions, descriptions, or starter questions to the discussion board, with more freedom to choose themes or topics that interested them, rather than as directed by the teacher.

b) Topics of interest may have a contextual background but need not necessarily include multimedia materials like photographs or video clips. The posts could be words, statements or opinions, or text-only, which encouraged participation and discussion.
c) They were encouraged to identify effective links between uploaded and curriculum based classroom activities, which was particularly important given the third mid-term exam was approaching and they needed to start preparing for the final exam as well.

For privacy and relevance, the student participants in the First Iteration suggested that discussions be limited to the task group's private discussion to prevent interference from persons outside of the group, and to distinguish between relevant and irrelevant threads. Task-oriented discussion was therefore to be conducted on the designated social media page initially created for the task. The Second Iteration of the learning design lasted six weeks (11 to 16), with participants advised the final week would be dedicated to a feedback and debriefing discussion on the whole task, and group discussion. The qualitative data collected from the during-task observations and stimulated recall sessions were coded and classified into thematic areas, and then analysed using NVivo qualitative data analysis software, conducted after the researcher returned to the UK.

5.4.1 SM application observation

Social media observations were aimed at identifying relationships between participants and their perceptions toward the mobile learning task as an adjunct to an analysis of the data arising from their contribution to the task performance and design in the context of connectivist principles. The collaborative behaviour of students in accessing and sharing external resources and networks,

and the participation of time-free uploading, were also observed, as was their interaction with the teacher-researcher. This is a similar process to that of the first iteration, but freed of the time and resource constraints of that stage and with a closer relationship to connetivist theory assessed. The observations utilised Nah's (2008) ***mobile discussion board observation scheme, with interactions,*** (see Appendix 4), times, location preferences and content monitored and noted. Analysis of language use in SM interactions were categorised as: (i) familiarity of topics, (ii) task orientation, (iii) devices used to contribute to SM and (iv) SM usage.

5.4.1.1 Familiar versus unfamiliar SM application topics

The students continued uploading materials that reflected their own environments and contained some local activities or representations of different regions, including those who were new to the study in this iteration. Enthusiasm in collaboration on topics with which they were unfamiliar continued to be evident, as observed in the First Iteration, although relatively familiar topics were not as active or contextually-rich, perhaps reflecting the perception that there was less to learn therefrom. Participation in SM discussions appeared to increase when the teacher joined in, and SM presence increased, with more students keen to respond to or comment on the teacher's threads more so than on those of each other.

After some students expressed their interest in including other text-based materials, the students started to collaborate on text-based posts that reflected the external context, such as local incidents and breaking news, football for the males, and even jokes about exams. Notably, most text-based uploads were originally in Arabic, as were related comments (see Capture 5.1). The quality of argument and debate of SM discussion also improved in the Second Iteration

compared to the previous stage. The diversity of students' opinions became more pronounced, especially when referring to different sources of information or networks. This was a clear reflection of the connectivist principle that "learning and knowledge rests in diversity of opinions" (Siemens, 2005, p.26), growing through the use of mobile SM technology as students absorbed and managed greater levels of learning (see Capture 5.1).

Figure 5.2 Students' SM application collaboration on text-based discussion

Collaboration on teacher involved activities, and on posts with new information and knowledge the students found interesting and that represented something new, was high and rich with inquiries and additional information (Capture 5.4). Where uploaded videos, pictures or text captions were in English, as most were, the interaction was primarily in English (Captures 5.1 and 5.2). Communication in the target language was particularly competent when they appreciated the contextual value of any uploaded material, or when the uploaded material represented something unique or interesting with which they were unfamiliar. Curiously, the

quality was not so apparent when collaboration appeared to constitute somewhat of a ‘chore’, when they appeared to find little of interest or contextual value, or if the material did not add to their knowledge. This is indicative of connectivist learning behaviour, with students seeking information they believe enhances their knowledge, and cognitive connections with material they perceive as significant, somewhat by-passing that which does not fulfil their needs. They avoided, even ignored, insignificant threads that did not maintain a continuous process of learning or new information.

Connectivist theory further asserts that "***learning may reside in non-human appliances***" (Siemens, 2005, p.26). Contextual information and images provide a potent source of potential knowledge for students, accessed through the exploration of the internet and examined by way of social media exchange in the DBR project. Capture 5.3 is indicative of the collaboration on local data and images from a student's home environment. This is a valley close to his hometown, and other students enquired about its name and the location of the valley, attracted by the atmosphere preserved in the upload - a product of advanced digital technology. The commentary and interaction was in English and the quality of grammar and use of punctuation marks is striking as students cooperated with each other in pursuit of their learning.

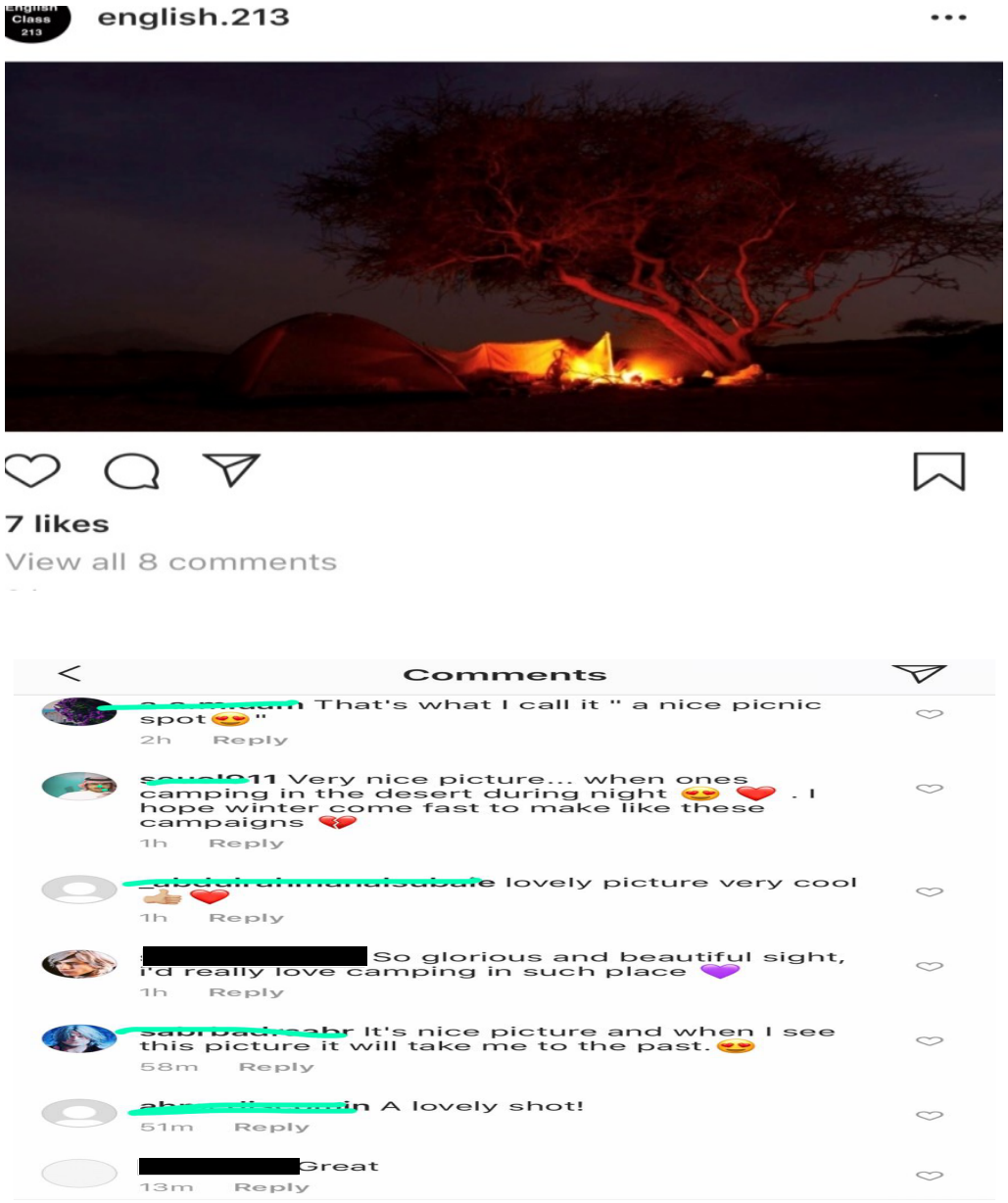


Figure 5.3 Students' collaboration on contextual topics

The change to non-scheduled posting requirements and contributions, to accommodate the connectivist freedom which should be accorded to students to support their learning, resulted in learners more regularly contributing material, even when they had satisfied the original DBR obligations. They uploaded more updated topics and texts than was noted in the First

Iteration, perhaps because they felt less 'confined' in regulating their learning according to the project's instructions. Some SM posts in the First Iteration were updated by contributors when they seemed out of date (Tables 4.3 and 5.3). The use of English appeared a more critical priority for students and the posts more reflective as they became more comfortable with the exploratory and contributory learning practices. This was especially so given the looming mid-term exam, but even in what was simply required in their normal in-class activities. These developments were more evident in the Second Iteration process, and indeed collaboration on such pragmatic, curriculum-based topics now tended to be more in English than Arabic (Figure 5.4).

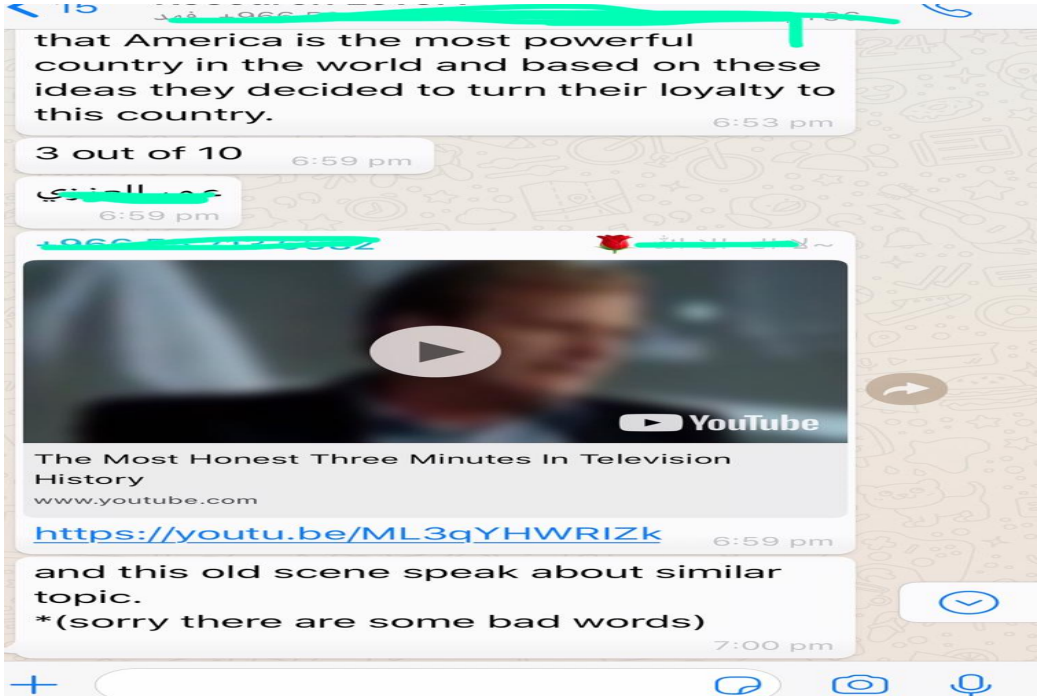


Figure 5.4 WhatsApp application collaboration on pragmatic learning-related topics

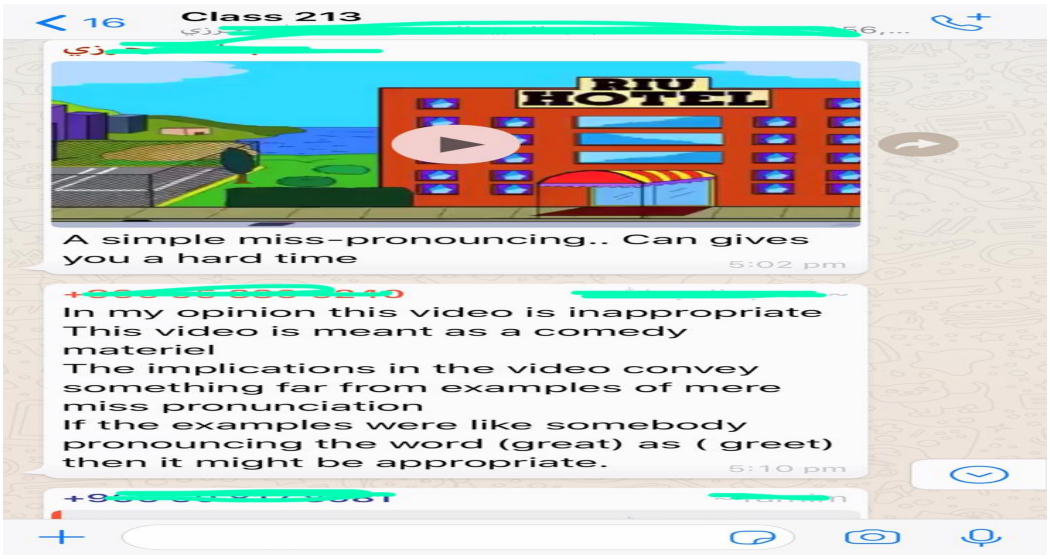


Figure 5.5 Student application collaboration on familiar posts

5.4.1.2 Task-oriented versus casual discussion

The students continued to upload task-oriented threads that included contextual characteristics of interest and linguistic elements of text for collaboration, incorporating personal and local perspectives into their SM discussion for both task-oriented discussion and casual threads. The discursive interaction enabled the students to consume and contribute towards knowledge exploration, construction and dispersal, while collaborating on different exercises as a group with the focus on English learning and use (Capture 5.3). This facilitated an environment where the introduction of new knowledge would lead to capitalisation on each other's resources and new information, leading to novel learning. In the Second Iteration, casual communication and threads grew as it was observed that students became more comfortable with the digital online environment. This was a marked difference with the First Iteration of the study as the learners, and indeed the teacher, were getting to know each other. The teacher was now a part of the group, perhaps not a 'fully-fledged' member insofar as familiarity in communication style was

concerned, but nevertheless a part of the relationship structure which was clearly building in the group as interaction increased.

5.4.1.3 Mobile phone versus laptop/PC contribution

Student use of mobile phones to contribute to the Instagram application was monitored during the observations. Instagram notifications only reveal the device used to upload, but not the one used to make comments or participate in other Instagram application activities. The use of mobile phones to contribute to Instagram during the Second Iteration did not significantly differ from the First Iteration (Figure 5.2). Students tended to use computers during the midterm period, indicating that most spent the majority of their out of class learning and revision time at home preparing for their midterms. Those who uploaded larger files to the Instagram site had previously complained that the smartphone technology was slow and expensive, more conducive to capturing and editing materials uploaded from elsewhere. There was a difference in such practices and perspectives evident between the male and female groups, but not so significant as to lead to questions which direct a conclusion that students are able to determine what technology fits their practical needs and use other facilities to access learning and manage learning materials.

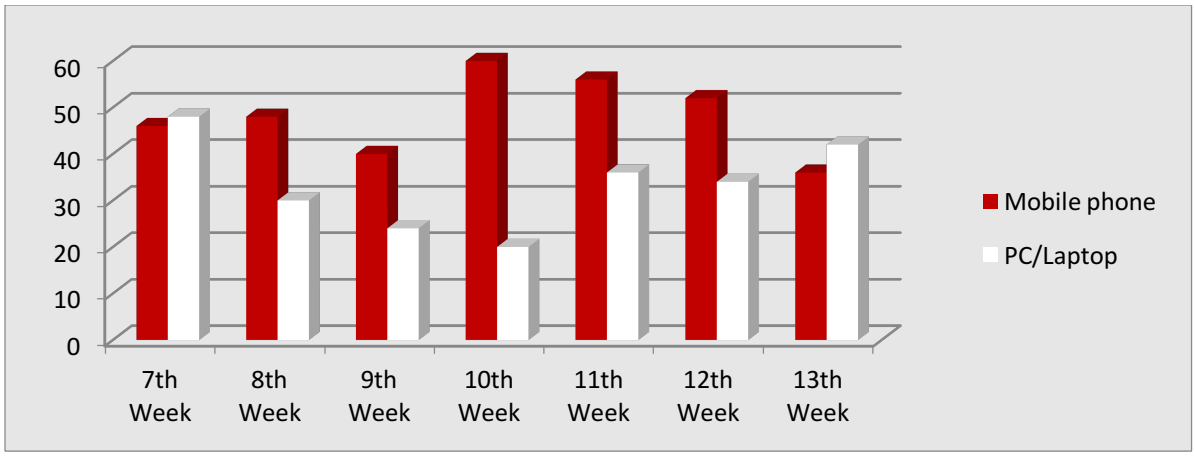


Figure 5.6 The total number of male uploads on both mobile phone and PC/laptop: Second Iteration

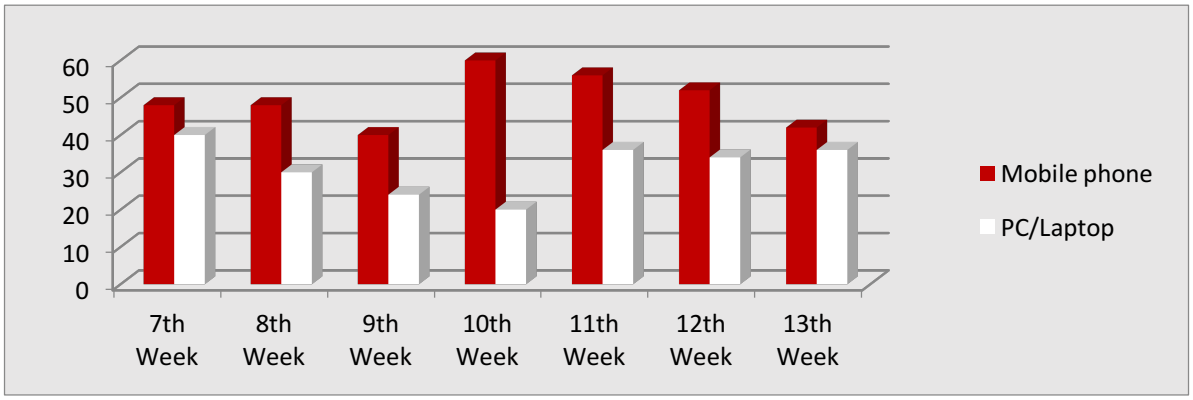


Figure 5.7 The total number of female uploads on both mobile phone and PC/laptop: Second Iteration

5.4.1.4 Casual versus structured usage

Instructions on the conduct of the DBR were less structured in the Second Iteration, certainly insofar as there was no designated upload or contribution timetable, but students were asked to ensure they engaged with the project as effectively as they could. Learners could otherwise upload what and when they wished and indeed one presented some 15 photographs from his own

area at different times. The Second Iteration evidenced greater participation and interaction as the freedom to explore, learn and contribute grew (Figures 5.2 and 4.1).

The approach of the second midterm and the final exams stimulated much activity on the WhatsApp application concerning the discussion of exam-related topics. This cooperation and interaction, it should be noted, was never available or encouraged before. In the de-briefing at the end of the Second Iteration process, the participants indicated that they appreciated the opportunity to express their concerns to each other and know they were all feeling the same trepidation. Fears would be settled by discussion on tactics, not always accurately it must be said, along with ideas on how to complete exam-based exercises. They used the DBR page to exchange ideas, share advice and seek assistance from each other, as well as confirm Blackboard notifications from the university site regarding attendance, times and places.

It is a given that in times of stress, people will turn to what is familiar, and it was evident from the SM interactions that students were seeking assistance on text-book information, location and page numbers. Often such discussions would revert to Arabic. It was understood from the in-task focus group discussions that learners were contacting each other privately, by message or phone call, for more detailed discussions of their work and plans. The connectivity of social media, the faculties of the smartphone and the DBR programme, evidently created a new learning environment which students were utilising according to their changing needs. It was changing the way they accumulated knowledge, dispersed information and the management thereof, criteria integral to the development of a theory or philosophy of learning. It did not however indicate a clear break with past practices of learning.

Formal classes ended the week after the Second Iteration procedure concluded, with the final task to upload comments and perform set exercises, referring to their different online networks in their answers. This exercise was predicated on the connectivist principle that ***"knowledge in a database needs to be connected to the right people in the right context***" (Siemens, 2005, p.26), sourcing knowledge beyond traditional teacher presentation and looking to the diversity of online information and context. Arguably, in a rapidly changing digital information network, the teacher is no longer the most reliable and up to date source of knowledge. Indeed, few would claim to be so, although this does not undermine their role as guide and arbiter, especially in a culturally sensitive framework.

Casual SM usage on the DBR programme was based on local news, discussion of football for the males, and fashion and pop music for the females, and funny uploads, particularly during the last two weeks of the Second Iteration. This behaviour is interpretable as pre-exam stress relief which, given it was conducted in English, aided progression of EFL learning. Task-oriented discussion decreased significantly (Capture 5.5) as students reverted to textbooks and their conventional methods of exam revision, with the uploaded materials and texts directed toward that goal. The adjustment to the DBR after the First Iteration assessment enabled learners to essentially do what they wanted on the Instagram platform, and observations indicated that students responded in a manner most pertinent to their immediate and changing needs. Connectivism provides significant conceptualisation of such learning and task practices, providing explanations for behaviour in the networked learning group. This is discussed further in Chapter Six.

Figure 5.8 Students' collaboration on task-oriented topics during exam period

5.4.2 Stimulated recall sessions

The stimulated recall sessions were carried out during the middle and final week of the Second Iteration (weeks 13 and 16) with another five randomly-chosen students, with whom the stimulated recall sessions in the First Iteration were not conducted. As for the stimulated recall sessions in the First Iteration, the five-student sample consisted of students from both lower and higher achieving groups based on their achievement in the mid-term exam. The sample also included both active and average SM application users, as well as both uploading and participating students.

The 15-minute sessions that have been voice recorded and transcribed, were conducted with students on an individual basis with the researcher watching. This was to enable reflection on their contributions to SM activities, pointing out problems, improvements and interesting elements of language, including cultural or contextual characteristics. The researcher added his comments and observations of their work; provided clarification and explanations when needed, and reviving memories, which aided clarity in their feedback on learning intentions and strategies. They reflected on the DBR adjustments in practice between the first and second iterations, exploring their experiences of involvement in pedagogical and learning reshaping. Practical problems were identified in the context of the application of connectivist principles in the Second Iteration.

The evidence from feedback provided clear support from nearly all students in both groups for the use of mobile accessed social media technologies in language learning, confirming the other findings related herein. They embraced the opportunity to explore different contexts while

learning, as this provided them with rich opportunities that not only enabled them to collaborate in English and improve their communication skills, but also increased their knowledge of their own national diversity:

> *One of the great benefits we got from the task was that we learned about each other. For example, [a student's name] uploaded a picture from his own village. I only heard about that village from other friends but did not see any pictures* (Male student: 6).

The same student also liked the idea of sharing traditional folklore representing local areas;

> *I have watched many clips on YouTube showing different traditional dances, all of which were basically recorded from TV channels a long time ago. So I really liked the clip of Gazzuai on the SM application. It was captured just a couple of weeks ago* (Male student: 6).

A female student indicated that the idea of presenting local materials in English through social media exercises changed his previous image of the language:

> *I used to think that the English language is merely a language of instruction or a language that I only see in movies. I never thought that we might learn something about our own culture in English* (Female student: 6).

English was no longer perceived as merely a compulsory subject that they needed to pass in order to finish their degrees due to the lack of authentic opportunities to practice the language outside the classroom, which turned it into a chore. Years of traditional teaching practices and learning experiences had isolated the classroom from the surrounding environment in a way that minimised opportunities to integrate local cultural norms into learning activities.

The participants also appreciated the potential of social media to provide them with different learning resources and networks beyond their own learning group, connecting them with other networks and resources that helped identify and refine authentic and contextual sources of information, such as news. However, privacy was of concern for some students:

> *[If I was a teacher], I would ask each student to create a SM application account dedicated for the learning task. Technology sometimes is being used inappropriately* (Male student:4).

> *What is good about SM applications is that it is more informal, but teachers and their students have to create their own private groups, which are inaccessible to others* (Male student: 5).

Another disagreed, stating that they learnt more from the different networks available on SM as a more flexible learning environment as compared to Blackboard.

The stimulated recall sessions investigated student reflections on their contribution to the design adjustment as the programme of mobile technologically based learning progressed. They broadly indicated that SM facilitated student-student and student-teacher communication, which made it easier to reflect on the design by enhancing the current practices and avoiding or manipulating others which were less suited to the way they wished to learn. They reported that SM provided informal communicative channels, which helped them to discuss different issues regarding their learning task with each other and with the teacher and suggest different resources and ways of learning. The distance facilitated by SM enabled less active or shy students to express their opinions freely and to collaborate effectively, even raising the

teacher's attention to some of their personal issues using the SM application, rather than seeking face-to-face communication:

> *As you can see, I used the SM application to ask for an extension and express my circumstances that did not allow me to do the mid-term exam on time. For me, this is more important than following some meaningless topics [laughing]. I hope other teachers use Blackboard the same way* (Male student: 2).

The appropriate use of mobile phones and SM, as well as time and access preferences, were also discussed during the sessions, with some commenting that for learning purposes there should be a private exercise from which the results can be shared with the group. Others indicated that it might be ineffective to put more restrictions on SM activity related practices as it was conducted in an informal social environment. Those students less concerned with privacy issues stated that restrictions and privacy settings were a private matter and up to the individual. Most also reported that they preferred to use the SM page for interaction after class and in the evenings, with others accessing it on university campus, and a few admitting they had used it during classes - not necessarily EFL lessons. This is supportive of the connectivist learning principle that digital technologies change practices of knowledge accumulation to an any-time, any-where basis.

The responses from the simulated recall sessions on the practical and technological effectiveness of mobile phones in contextualising language learning echoed the obstacles and barriers to efficiency noted in the First Iteration discussions. Students favoured browsing sources of information and sites, as well as SM from their computers rather than their mobile phones, due to the small screen and keyboard size and expense, as well as slow upload and download times.

They did, however, appear reluctant to discuss the cost issue with the teacher on a personal basis, despite a culturally based reticence about the discussion of money, particularly relatively constraining financial circumstances, either personal or in the family. This eased a little as the student-teacher trust grew during the course of the DBR project and confidence grew, leading on occasion in the simulated recall sessions to quite significant personal disclosures regarding family issues. It is believed by the researcher, perhaps misplaced and slightly cynically, that such subjects were raised with the hope of some special consideration in finalising their assessment. This is not a motivation attributed to Male Student 5 above. In any case, practical and technological obstacles did not significantly inhibit the development of effective communication channels with each other and with the teacher (see Tables 4.3 and 5.4).

A student who used SM to organise his learning on weekly basis reported that Blackboard had a similar functionality of organisation, but he did not use it for those purposes:

> *I enjoyed chatting with friends over what we had for the mid-term exam. SM helped us to keep all of the learning materials handy and on the go. We can do the same with Blackboard, but to be honest, I do not feel I like using it if I have a better alternative. Blackboard does not support interactivity compared to SM, and in SM I can chat with my friends and take care of the course at the same time* (Male Student: 13).

Although Blackboard was made available for the students to use at the beginning of the semester, a requirement of the university being that all should be registered for its use, none of the interviewed students used it for the course. The interviewees indicated that Blackboard is a formal site that does not support interactivity, describing it as a boring tool compared to social

media, and they were not keen to check it regularly the same way as they did with their SM site. This issue is discussed in more detail in Section 5.5.1.

5.4.3 Analysis of SM Application Discussion

As was noted in the First Iteration, three major aspects were highlighted by the analysis of SM discussion, namely: (i) language use and content, (ii) student-student and student-teacher communication, and (iii) usage patterns and behaviour. The analysis of SM discussions in the Second Iteration focused on the change over the period in the students' performance and their responses to and participation in the design adjustment to which they contributed.

5.4.3.1 SM Language Use and Content in the Second Iteration

The students continued to use English for collaboration on both task-oriented and curricular topics, mixing with it Arabic on occasions during casual interactions at a time which suited them and their knowledge exploration activities rather than following a designated timetable. It was observed that this resulted in more task-oriented and contextual topics being posted and reacted to. Even so, English remained the primary language of communication and interaction, with Arabic used when they may have felt they could not express their ideas clearly enough in the target language. English was used to raise points or to ask or answer questions based on textbook exercises, and Arabic when the practical aspects of exams and attendance were discussed, both languages being used in the same thread when clarification appeared necessary. Notably, the students never used English in their SM private messages or SMSs directed to the teacher.

It was observed that the use of either English or Arabic in the SM discussion varied from one student to the other, with high-achieving students tending to more use of the former. Those

who missed a class or an exam also used English afterwards more than those who attended the class or did the exam, perhaps trying to compensate for what they missed or to ameliorate their neglect and impress the teacher. In general, and following the practice in the First Iteration, students would comment using the same language in which the thread was originally posted (see Captures 5.1 and 5.2).

The students clearly preferred to post task orientated threads rich in contextual elements that reflected their own environment, aware this would attract their classmates to participate in the discussion, and as is common in SM use, seeking likes and comment. Students were thus becoming more differential, selective and critical in their choice of material to meet what they thought their classmates would react to and approve, and indeed became more critical of the threads of others. There is no inherent problem in this because criticism was always good-natured and aimed at improvement, even showing-off knowledge. Attention-grabbing was an objective as well as learning, which clearly generated a considerable amount of discriminatory effort on the part of material contributors in finding current information. This is reflective of connectivist learning practices by which students will seek knowledge which best fits their current need to convey information. High quality contextual richness and uniqueness was matched by the imaginative skills of capturing and editing, even towards the end of the project, although commentary reduced as students focused on their exams. The DBR project had arguably become a relaxing diversion from the traditional technicalities of curriculum demands, but which nevertheless remained a recreational activity predicated on assisting learning as well as a mode of advice exchange.

The analysis of SM language use and content can be classified into contextual and non-contextual use, as in the First Iteration, and used as a basis for comparison of development between the stages. Contextual language use included both task-oriented and non-task-oriented discussions; textbook topics, as well as casual interactions considered task non-contextual for the purpose of the study (see Table 5.3).

Table 5.3 Types of Language Use Based on Analysis of SM application Interaction: Second Iteration

Types of language use	Characteristics	
Contextual language	*Task-oriented*	•The outer context was highlighted •Discussion met the task requirements •Comments were more critical and reflective •Uploading students became more selective •Reflection on in-class activities and textbook exercises •Non-scheduled, mostly on weekdays •Mainly in English
	Non-task-oriented	•Implementation of context in learning-related issues, e.g., mid-term and in-class activities •Teacher-involvement became less •A mix of Arabic and English •Non-scheduled, mostly on weekends
Non-contextual language	*Pragmatic language*	Discussion focused on exams, assessment, and attendance •Apparent in situations like: asking questions or for clarifications, asking or offering help, drawing attention, etc. •Use of symbols to express feelings became less •A mix of Arabic and English •Found in both public discussions and private messages

	Casual language	• Mainly in Arabic • Casual topics were discussed • Used fun and humour • Teacher-involvement increased • Mostly non-scheduled, both weekdays and weekends

In the inter-iteration period of reflection, wherein it was considered appropriate to remove instructions on times and posts in consideration of the freedom promoted by connectivist learning, the researcher was curious how this would affect the task-oriented and non-task-oriented nature of posts. Students had no difficulty with such differentiation and indeed their task-orientated contributions and comments increased in number, quality and critical analysis. Furthermore, it was noted that some of the other class students who were not involved in the focus group learning also accessed the page and became involved in the commentary. Casual topic uploads substantially increased in the Second Iteration, particularly during the first three or four weeks as students developed stronger relationships with each other.

Teacher involvement therefore decreased as the learners felt able to turn to each other for advice and assistance, becoming more independent, autonomous, and self-directed, even when facing a technical problem. Assistance was also sought elsewhere, such as a student posting the picture of a flood at his home village sent by an uncle who was supportive of his nephew's learning. Education here was a family experience. The teacher-researcher was involved in more casual exchanges, but also regarding practical concerns at around exam preparation time as enquiries revealed the natural onset of pressure and the need for authoritative guidance. They felt comfortable raising learning-related issues in public SM discussions, and to express gratitude to the teacher after finishing the final exam.

It is unusual in the socio-culturally regulated lives of young Saudi adults to find such openness in SM discussions about personal issues and problems with the teacher, particularly amongst those taking the course for the second time. Some sent several SM messages via the private facility and even SMSs explaining their circumstances and asking the teacher to help them pass the final exam. In this researcher's experience, this is evidence of constructive trust building as the student-teacher relationship becomes more pragmatic. Closer student-teacher relationships were a necessary precursor to eliciting reflective feedback from the students regarding the continuing design adjustment and data generating process of the DBR.

5.4.3.2 Student-student and student-teacher WhatsApp application communication

Student-student relationships improved as the program proceeded, with WhatsApp interactions including casual topics and jokes, and even in-class informal communication improved. Communication and critical skills improved over time, as well as the quality of information uploads and contributions on SM. In the First Iteration, the students commented on each other's threads using short sentences, mainly thanking the one who uploaded the topic or stating they liked the post (Capture 5.6). In the Second Iteration, their comments became more critical, with more detailed information and evaluation (see Captures 5.2 and 5.4).

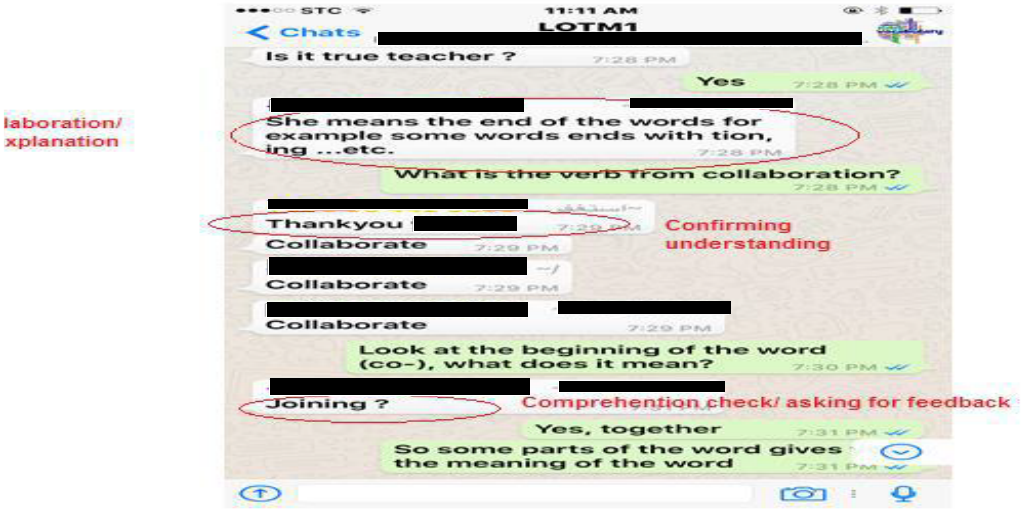


Figure 5.9 An example of students' collaboration at the beginning of the study (First Iteration)

The students evidently became more experienced in employing a variety of contextual elements in their learning tasks and collaborating on them. They recognised the depth and potential of the context as a major source of information, with SM interaction effectively enabling the accumulation of valuable contextual knowledge and language improvement. However, the use of what they deemed to be "understandable", common English remained a concern for some students who were struggling to create meaningful messages or to clearly express their opinions (Captures 5.4 and 5.6). They would revert to Arabic when the discussion became more critical or sophisticated.

Occasionally, it was observed that some English sentences did not make sense or were grammatically incorrect, but there was little opportunity for students to self-correct where they were not understood or responded to. Other sentences used complex or unusual words beyond the students' education level, indicating that perhaps they were attempting to use online

translators such as Google Translate which has accuracy problems, especially in translating Arabic, as is evidenced by users on social media platforms. They were arguably attempting to "out-do" colleagues with their language use, and such a competitive element encouraged enthusiasm and advancement in learning. Mistakes are a learning experience. It is an inevitable result of connectivist thinking and principles of autonomous learning.

Data analysis was again affected by using the ***online discussion board observation scheme*** (Appendix 4), and observations of interaction and content types were noted, calculating the number of student -student and student-teacher SM application interactions (see Tables 5.4 and 5.5).

Table 5.4 Types and Number of SM application Discussion/Messages: Second Iteration

Discussion/message type		Number of postings
Task-oriented discussions/messages	Giving opinions	13
	Supporting opinions	45
	Expressing agreement	26
	Expressing disagreement	23
	Giving information	48
	Asking questions	30
	Providing answers	19
	Asking for help	13
	Giving instructions	10
	Providing advice	1
	Expressing difficulties	6
	Expressing thanks	120
	Expressing liking	35
	Expressing emotions	11
Non-task-oriented discussions/messages	Giving opinions	6
	Supporting opinions	14
	Expressing agreement	4
	Expressing disagreement	11
	Asking questions	8
	Expressing thanks	13

Expressing liking	13
Expressing emotions	40
Expressing difficulties	2
Greetings	2
Encouragement	15
Making jokes and fun	95
Giving praise	48
Giving information	23

Table 5.5 Number of Male Student to Teacher/Teacher to Student SM application Interaction: Second Iteration

SM application group wall		SM application private messages	
Student to student	*Teacher to student*	*Student to teacher*	*Teacher to student*
156	70	49	45

Table 5.6 Number of Female Student to Teacher/Teacher to Student SM application Interaction: Second Iteration

SM application group wall		SM application private messages	
Student to student	*Teacher to student*	*Student to teacher*	*Teacher to student*
169	23	63	55

Table 5.4 indicates that the purpose of student language use did not substantially differ in the Second Iteration when compared to the First Iteration (see Table 4.2). The captures in this chapter, however, show a marked improvement in the quality of language as well as the extent of collaboration. This may be attributable to an improvement in the linguistic abilities of the students - a variable this study was not designed to explore, but it is arguable that familiarity with each other and the teacher boasted motivation to perform and develop, as traditional

obstacles were removed. Contributing information and expressing thanks were the most apparent types of language used. Exam times changed the frequency and content as students

reverted to the texts upon which their tests would be based. There remained communication and requests for advice, tactics and help, expressed somewhat more emotionally than in the First Iteration, perhaps reflecting the new relationship, and there were also more jokes.

5.4.3.3 Usage patterns and behaviour

On the privacy issue, and despite greater confidence in their colleagues, by the Second Iteration, only a few students had completed their SM profiles with either their real names or photographs, or both. They were still using nicknames or non-personal photos, changing them from time to time, making it difficult for the group members and even the teacher to recognise their identities without referring to their previous posts; although anonymity perhaps added a little extra fun to autonomy. In private messages, each student was required to confirm their identity by providing their full name and student number to get a feedback report. Access, upload and comment contribution times and places did not vary appreciably from the First to Second Iteration and remained generally weekdays post-class or in the evening for task-oriented posts. The casual interaction did not appear so 'organised', taking place when something struck the contributors as interesting, even in class.

Mobile phone use declined in the exam preparation period as students turned to their computers. Both male and female groups indicated that they were concerned about answering the formal curriculum-based exercises and following Blackboard announcements, finding

computers more reliable. They tended to spend more studying time at home. One used the Instagram group for information on page numbers for the textbook exercises that were uploaded to social media so he could more quickly use his hard copy to prepare for the exam in preference to the uploaded pdf. This was also the period when most student-teacher interactions took place, generally conducted from their PCs.

In conclusion, students in the Second Iteration continued their contextual learning experience, highly student-centred and user-generated, contributing to the design adjustment of the DBR program. This brought considerable satisfaction in their exercise of control over their learning and enjoyment. They chose their learning resources and accessed other out-of-class networks or connections that could enhance their language learning, reinforcing the operation of the findings of connectivist theory principles of learning through the digitally available diversity of contextual knowledge and information (Figure 5.1). Student feedback on mobile language learning tasks and experiences, as well as their contribution to the shape of the final set of the design principles for mobile language learning, are discussed in the next sections.

5.5 Findings from the Post-Task Focus Group Interviews

The post-task focus group interview was conducted two weeks after the task was over at the beginning of the second semester. The interview was conducted with the same participants with whom the pre-task focus group interview was conducted. The discussion interview collected data about student experiences and their perceptions about the use of mobile SM application in their learning, and to what extent they benefited from the process of contextualising their language learning task. Context-awareness and the change over time in

the nature of posts and contribution were also explored. The data collection process was essentially a recall of perceptions, guided by the principles of connectivist learning theory set out in this chapter to seek assistance from the project participants on the effective conceptualisation of their learning practices and how they may have changed. This would assist in reshaping the design principles for mobile language learning based on student experience from a practical perspective.

5.5.1 Perceptions of using mobile SM application in language learning

It has been noted that the student participants found considerable benefit in mobile technological and SM use in their language learning experience, finding effective channels of communication with their classmates and the teacher, providing a valued adjunct to the faculties afforded in the search for knowledge and information to share. It facilitated formal lesson and textbook exercises, linking the classroom and the external environment, as well as academic and contextual learning practices, which required students to develop new ways of managing priorities in knowledge accumulation based on purpose. Their purposes ranged from task fulfilment, casual interaction, exam preparation and the seeking of advice, along with consideration of cost effectiveness and difficulties around access. Social media platforms not only improved their collaboration, but it also helped them to organise their learning resources and to prepare well for their exams:

> *... now you will know whether you will have a lecture or an exam, like when you [the teacher] uploaded the academic words list that were included in the exam. We really benefited from it [SM application]. We may miss some of the words and find them on SM application* (Female Student: 1).

This supports the application of the connectivist learning principle that ***"knowledge in a database needs to be connected to the right people in the right context"*** (Siemens, 2005, p.26). Social media assisted the students in accessing, evaluating and organising information, providing easy-to-use categorisation of different resources into different technologically created folders. It enabled the distinction between learning-related and non-learning-related topics.

The high level of interactivity encouraged by the DBR project in the use of SM enhanced language use and collaboration. Other social learning, notification and messaging platforms available at the university, such as Blackboard, were of little use, described as "boring" and "pessimistic":

i. *... and if you work on Blackboard, you may have the [bad] feeling that you are still within the university campus* (Male student: 7).
ii. *... but it's [SM application] much better than Blackboard. If you opened Blackboard and found the Awaiting Homework, you should then inevitably complete it. In contrast, on the SM application, you can complete your homework, enjoy chatting with your friends, and keep updated with your classmates' threads and comments* (Male student: 10).

Blackboard was formal and less interactive, required fast internet and was not available on most mobile phones. Students did not synchronise between SM accounts and Blackboard, claiming SM was an interactive social networking website, whereas Blackboard was merely a formal learning and information tool. In this final session, the students simply confirmed much of what they had indicated in prior discussions regarding relationship development, contextual learning and the improvements in the classroom learning experience as emphasis on presentation was reduced.

5.5.2 Student evaluation of the DBR MALL project

A large number of the issues the male students mentioned in the focus group were similar to those reported by the female students at the end of the DBR project to sum up their perceptions of the new programme of learning they had been a part of developing. They commented on their active learner role in the course, the opportunity to practise and use the target language in context, and the enjoyment of the experienced from interacting in the exploration of real-life situations. They explained how their role had shifted from being merely receptive to the information delivered by their teacher, to being active in the classroom. The active role of the students in the learning process was self-directed learning and control over the learning process as major themes. As one of the students put it:

> *The new teaching method gave me a chance to choose what to study. We were not merely receiving rules and information any more. We had a greater role in the learning process. It also allowed for self-learning* (Male Student: 8).

Four students mentioned a new sense of achievement and that the new teaching method gave them self-confidence in learning English: '*I felt proud of myself that I did search in English and presented it'* (Female student: 6). The results of the interviews showed that boredom was no longer a feature of learning as a consequence of the MALL course and that classroom engagement had changed in a positive manner, even without the use of the mobile device therein. It was a fun session, and indeed enjoyment was mentioned 36 times in the debriefing, in end of project discussions:

> *I don't feel like I am in a regular classroom. I feel that I come to an entertaining learning session which has already been active outside the class and come to discuss what was posted* (Female Student: 13).

Besides allowing the students a more active role in the learning process, the new teaching method also provided the students with the opportunity to learn in a friendly, cooperative environment. Almost half said they found the new teaching method to be less stressful than traditional methods, mainly due to the relationship with the teacher, each other and the diversity of teaching aids and assessment tasks. One of the subjects pointed out that *'This method opens our minds to new styles of learning English'* (Student 3, I-2, 42-43). Mobile social media was described as a *'smooth'* way of learning, using English as a medium of communication and paying attention to all language skills - not only traditional textbooks and grammar. Contextual use aided retention of the learning content, through a more constructive operation than repetition and drilling. As one student explained: '*The stuff I learnt stays longer in my memory because I learn by practising and searching'* (Male Student: 12).

With regard to the teaching resources, the students found them to be motivating. Indeed, many were discovered by themselves via electronic means and shared with colleagues, not only informative of themselves but aiding evaluative skills which enabled them to give value to learning through sharing. The technological tools, be they mobile devices or fixed PCs, led them to exciting and enjoyable language paths for learning which were expected to enhance their outcomes. Female Student 10, for instance, reported that one of the advantages of using mobile and social media was that she *'could search the Internet in English and learn with fun as well'* (Female Student: 10). They speeded up the access to information, as *'using the mobile*

technology made it faster to learn and find the information we needed' (Male Student: 12). Knowledge could be edited for the specific purpose of conveying the message the student wanted to share, aided by colours, animations and other design features the computer programs facilitated: *'The graphics, colours and other designs linked the words with the figures in my mind'* (Student: 22).

Although the MALL blended learning course of the DBR study was the students' first experience of interactive group work, their impressions about the collaborative projects were positive, as more than half expressing the common descriptive of '*fun*', more so than working individually. '*Interesting*' was another descriptive as more use was made of internet resources rather than simply concentrating on textbooks and teachers. Some were surprised they had not thought of something so *'obvious*' as the web before. The small groups enabled the students to interact and cooperate in the classroom tasks and activities more comfortably and with a sense of safety: *'it was easier to learn, ask and discuss [in the small groups] with students who are within the same level. We learnt from each other'* (Student 20, I-2, 26-27). The social benefit from working in groups was emphasised by most participants, some making new friends and collaborators away from the project, strengthening their relations with their classmates.

More than half believed that the collaborative projects enhanced their language learning results more so than the individual mode of learning, for example, '*the projects were very useful and enjoyable at the same time. We had to work very hard but at the end we got good results' (*Female student: 6). It is however emphasised that this study does not seek to draw a cause-effect relationship between the DBR project, mobile tools and connectivism; that is a topic for future research. Nevertheless, the students believed that the collaborative projects enhanced their

language skills, with more than one third stating that working in groups provided them with the opportunity to practise - a feature that was lacking in the traditional classroom, as reported in the First Iteration of the study. A significant number also indicated that working on their projects required them to do extensive reading, which they believed had enhanced that particular skill and made them learn new vocabulary. The projects were also useful in enhancing listening, writing, and spelling skills:

> *As to learning outcomes, I feel that I learnt more while doing the projects in reading, listening, translating new words, and speaking. It was difficult for me to speak in front of the others before this course, which positively changed* (Male student: 1).

From the analysis of the student responses in the post-task focus group interviews, it is clear that the DBR course had a positive influence on their attitudes toward learning English, as they perceived and identified a range of advantages not present in the traditional pedagogical environment. Access to and exploring interesting contextual material, evaluating what they thought would prove useful, stimulating curiosity and responses and practicing language through collaboration with others, were the major advantages of the DBR project. Enjoyment and the sense of challenge should not be underestimated as the results of the study.

5.5.3 Evaluation and attitudes toward contextual language learning

Contextual learning in a group process via mobile SM expanded knowledge beyond language to creating an awareness of different regional beliefs, traditions and cultural practices in Saudi Arabia and potentially further afield. In the post-task interview and discussion, an interesting debate re-

focused on the incorporation of text-based topics that reflect local issues, although the multimedia materials were not always effective. In one student's words:

> *WhatsApp application discussion is not only meant for views or landscapes. They [textual topics] could be collaborative, too. Even if they [students] are not familiar with those topics, how can they [students] benefit from them? How they are really connected with study matters?* (Male student: 7).

Consequently, that same learner suggested that topics on current local issues could be incorporated to promote out-of-class language use and further collaboration, thus expanding knowledge of ongoing incidents and events which may not be accessed in a home environment:

> *... we in our village, for instance, do not have the internet service, so we have that problem when we need to engage with people from other areas* (Male student: 7).

Another suggested that the concerns and learning problems of individual students could be relevant topics that students may find interesting outside of event or area-based posts, perhaps assisting in resolving problems not hitherto discussed amongst them:

> *We can discuss why most Saudi students are weak in the English language. You may find more collaboration on such topics, and you will find then a variety of opinions. This is particularly true when there are different levels of language proficiency among students* (Male student: 5).

Collaboration on text-based topics, rather than images, only arose in the Second Iteration, posted as discussion points and issues to pass on information in English. Students provided creative and interesting ideas that could successfully enhance the presence of contextual elements in EFL language use generally. Text was clearly deemed to be a valued addition to

the resources, even in the absence of access to or availability of multimedia materials. For example, one student suggested a contextual local issue about a negative phenomenon in society and responses would be geared toward resolution or empathy, but generally lead to a more critical SM discussion:

> *The inability to be critical or to criticise things can also be a problem, especially for what is being discussed in the classroom. Sometimes students cannot effectively connect between the in-class and the out-of-class situations. We need to keep the topics open* (Female student: 3).

Students were motivated to engage in language learning activities related to their own experiences, dealing with their surroundings, using their developing evaluation skills to draw on authentic resources for mobile language learning experience.

5.5.4 Difficulties with mobile phone technologies and mobile SM application

The cost factor was consistently expressed as a major concern by most students of limited income, with making calls and text messages priority expenditures over internet browsing. Much of this problem in the DBR project was overcome through an investigation of free access points. The free Zero SM service is only available through one mobile phone provider in Saudi Arabia so all could not benefit. Therefore, the students suggested that learning institutions should provide their students with either internet-enabled mobile phones or free or discounted mobile phone internet quotas. This is somewhat wishful thinking, but the university has now installed a campus wide wi-fi facility, although it is too late for use in this study. Other problems have been detailed herein such as slow uploads, especially video clips, and small screens and keyboards, but the students proved imaginative in seeking their own solutions using home and

university PCs and then accessing them via their mobile device. Others suffered other obstacles in their pursuit of learning:

> *I usually access SM application almost every hour using my mobile phone either through a cellular network or a local wireless network. I'm subscribed to a cellular data network quota. I prefer it that way! I don't usually access it [any social media application] with a computer* (Male student: 9).

It did take some time, effort and use in the First Iteration for many students to recognise how effective it was to use mobile SM for learning purposes, but they found no contradiction in the platform being a social communication site and learning tool. Some, however, were not enthusiastic about their self-education efforts being available on a relatively open SM platform, hence the use of nicknames and avatars. They feared making mistakes in front of their learning community, misspelling words and lack of vocabulary which made initial engagements appear reticent and prevented them from full engagement. This was overcome in discussions in the First Iteration period, leading to improved quality of interaction in the second. One student suspected members were using sites to correct sentence structure before posting, but this was part of their learning process - investigating and using sources of assistance, and learning from them.

5.5.5 Reflections on shaping the design principles for mobile language learning

Data collected from the DBR project and post-task focus group interview was evaluated to identify a new set of design principles for contextual mobile language learning. The students were asked to take the role of an EFL teacher who was required to design a mobile language learning task for his students. They were required to evaluate the overall learning task, focusing

the discussion on any helpful learning activities that needed to be reinforced, with others to be avoided, replaced, or improved. Their assertions were as follows:

i. learning resources should be as open as possible, with easy access to online dictionaries and

ii. English websites that have a focus on the native surrounding environment and culture; this may be a culturally sensitive issue in the Saudi context;

iii. Contextualisation of learning is essential, given that it increases a sense of ownership of the knowledge and facilitates evaluation and communication. Some contexts may be more interesting than others to some, and indeed several of the students suggested their colleagues needed to put more effort into making their posts attractive, for example by visiting events before writing about them. It was a somewhat harsh criticism, and all were reminded that knowledge and understanding was not simply a fun enterprise but a duty to learn and contribute in the interests of the community;

iv. The mobile language learning task should be part of the university assessment programme in order to foster motivation to participate. This would require a pedagogical involvement in the activity setting with a judgement reached on quality of contribution and engagement;

v. before commencing any language learning task, a detailed illustration of the mobile device or app that is going to be used in the learning task should be provided and explained to prevent delay in its use; some revealed that even two or three weeks into the learning task they were not fully aware of the potential of the mobile SM application for contextualising their language learning experience but did not want to ask;

vi. universities should provide their students with effective mobile devices dedicated to the task of language learning, perhaps at least free or discounted mobile phone internet quotas. The university provided synchronisation between Blackboard and SM apps, but the students thought this insufficient, and in any case had installed campus wide free broadband by the end of the DBR study (Capture 5.7);

vii. privacy of the learning community should be protected to ensure free exchange in a trusted online environment, given that some students pointed out some links or photographs shared on the SM application by users outside the group were inappropriate or were of educational value for the learning task. It is important to note that although they were advised to limit their task-based communication to the closed SM application group, most students tended to collaborate on the public group SM platform, with one student arguing that privacy cannot effectively be maintained on social networking websites:

> *I do not like anything private in SM application; I like watching each other's activities and see what is going on. I think there is no privacy on SM applications. Private messages are not anything special, curious users who look for anything will definitely find it* (Female student 9).

The student indicated that even with closed groups and private messages, privacy risks are still high due to hacking - not a problem identified in this process. The degree of self-confidence and desire to self-control, choose and determine what would enhance their learning was important with it being easy to reject any inappropriate content. This is a prerequisite of privacy and the need to ensure that new accounts were registered for the education programme in a designated group. Privacy and social media is discussed further in Chapter Six.

5.6 Summary and Conclusion

This chapter has presented data from the Second Iteration of the DBR mobile language learning task, examining how a connectivist learning philosophy can provide a theoretical structure for language study based on the accessing, evaluation and management of information by the student. Analysis and presentation of data obtained from SM observations and discussions, both in-task and at the end of the DBR project, indicate that students can alter the way they accumulate learning and use the technological platform of social media to assist assessment, pertinence and categorisation. Learning practice has evidently changed with the alteration to the pedagogical programme effected through design-based lesson planning.

The most obvious change to behaviour was in the acceptance of learning as an activity which must expand beyond the classroom, facilitated by social media which prompted any-time learning via a community adopting the multimedia faculties of digital technology, both formally and casually. The idea that learning English could be a casual, enjoyable activity was a revelation to the participants who appreciated that access to internet resources provided what they wanted to know in the pursuit of their self-education. They proved to be very selective in the choices they made of learning materials, with no instance observed of crossing the lines of their cultural beliefs. Such has been the nature and extent of their learning experience, in that they were able to discuss how they wanted to be taught and set generally culturally acceptable parameters and steps for a new integrative pedagogical process. Chapter Six will discuss the findings, considering the context of the literature review study in Chapter Two, to determine how their design principles can be refined into a policy statement for mobile language learning.

6 Chapter Six: Discussion

6.1 Overview of the chapter

The qualitative analysis processes on the diverse sources of data collected from the empirical study has enabled considerable progress to be made in meeting the objectives and research questions asked of this exploration into the value of social media platforms to the teaching of EFL in Saudi higher education. Perhaps the key findings of the data research, as noted in Chapter 4 and 5, are that

(i) traditional teacher-presentation education is, from the student perspective, failing and avoiding students' interests for learning. This is reflected in unsatisfactory outcomes and the students in higher education expect more than they feel they were subjected to in earlier years;

(ii) There was a broad enthusiasm for a framework which utilised their ubiquitous, beloved smartphones applications with evidence of increased motivation to learn from a wider range of resources and, after some reticence, collaboration with peers and the teacher;

(iii) The element of control they could exercise over the manner of their curriculum learning was welcomed and engaging constantly of both classes;

(iv) There were few technical difficulties encountered in the promotion of extra-class learning;

(v) The major obstacles tended to be personal and cultural, overcoming shyness and reticence to share due to fear of embarrassment, which are simply overcome by practice.

The implementation of the design-based research approach, utilising principles for mobile learning in the context of the connectivist learning theory, enabled the empirical data collection programme to move from a teacher-centred approach to one orientated toward placing the student at the centre of their education in EFL. This may be termed in the context of this research as a programme for 'guided autonomy' and aim to answer the Research Questions as follows;

5) What are the attitudes and experiences of Saudi university students with regard to using mobile social media applications for language learning?
6) To what extent does the use of mobile social media applications and mobile technology affordances promote English language learning, autonomy and collaboration in the context of the particular, traditional educational practices practices of Saudi Arabia?
7) In what way does a connectivist design-based approach serve to improve language teaching framework in Saudi Higher Education by refining and adjusting current learning principles and practices?
8) What challenges and mobile design principles are encountered in the implementation of mobile social media learning in the Saudi higher education?

Herein the findings presented in Chapters 4 and 5 are discussed and examined in the light of the literature reviewed in earlier chapters, focusing on the reflected upon and developed themes used to represent particular issues explores and explained in the study. These are discussed in subsequent sections with the intention of examining the veracity of the connectivist theory of learning when compared to social constructivism, and the extent to which how students learn has changed in the accumulation of knowledge through social media, cooperative activities. Section

6.3 particularly highlights the student sense that mobile learning and the autonomy, flexibility and collaboration it introduces to the learning environment has effected a potentially transformational role for the student-centred learning. Considerations raised in subsequent chapter sections note the potential of design-based research in providing an effective framework to test, refine and adjust the learning design (Herrington et al., 2009). This facilitates the preparation of a set of design principles for mobile language learning, proposed in Section 6.5. The findings are discussed in the context of the Research Questions outlined above.

6.2 Research question 1: What are the perceptions of Saudi university students toward using mobile social media applications in language learning?

In the questionnaire process prior to the focus group study, the primary sources of discontent expressed by EFL students appear a relatively comprehensive indictment of the education framework for young adults results, namely teaching methodology, demotivating practices and its limited resources. Herein lies the basis for seeking to introduce new models of pedagogy which encourage communicative exchange and use of language in the furtherance of learning through MALL and the principles of connectivist methodologies, giving more involvement to students in accumulation of knowledge. The literature review highlighted the fact that in general EFL contexts can be described as teacher-centred and led traditional settings with institutionally directed learning practices by lecture. Students are treated as passive receptors of knowledge where there are very few opportunities available for them to practice their language skills (Al-Hazmi, 2013)

This is envisioned to be changed by government policy and initiative in Saudi Arabia as a result of the Vision 2030 initiative and introduction of technology into the classroom, but it has largely resulted in the transfer of traditional textbook learning to electronic means of access to such material. In the questionnaire answers and subsequent focus group interviews students indicated that their in-class language practice was limited, and that most of their class time was dominated by the lecturer. Observationally in this study was based, students expected the teacher-monitor to speak for the majority of class time in the traditional "top down" presentational, instructional manner.

Technology does not change teaching practice, simply provides a new mechanism for accessing knowledge using imaginative direction of the teacher and exploratory practice on the part of students. However, students' proportion of class time increased at the end of the study when they were given the chance to express themselves and collaborate more actively (see Table 6.1 and Table 6.2). The use of social media platforms provided informal student-teacher channels that assisted the learners to be more active participants in the classroom once they had overcome their initial reticence.

Table 6.1 Proportions of Teacher versus Students In-Class Use in Selected Weeks of the Study

8 minute random recording		Week 2	Week 8	Week 14
Student dominance	Time	29.15%	46.93%	48.08%
	Words	181	253	300
Teacher dominance	Time	70.85%	53.07%	51.92%
	Words	440	286	324

Table 6.2 Proportions of Teacher versus Male Students In-Class Use in Selected Weeks of the Study

8 minute random recording		Week 2	Week 8	Week 14
Student dominance	Time	35.15%	49%	56.08%
	Words	235	298	390
Teacher dominance	Time	65.85%	51%	44.92%
	Words	440	286	324

This teacher-dominated one-way language learning method emphasises students' passive pragmatic style of learning, Kannan's (2009, p.2) arguing that "students learn basic grammar at school level for the purpose of passing only in the tests and in the examinations and not to face any real life situations". This is a fundamentally ineffective approach for university students preparing for life in employment in global industry. There has been little improvement in expanding learning beyond the class room environs despite use of the computer and the internet (Traxler, 2015). In-class learning practices have also tended to focus on lingua-technical teaching of grammar and linguistics with little attention to communication contexts of use (Sharples, 2018).

The students in this study indicated unanimously that there were few opportunities for them to practice English outside the classroom and no extracurricular activities in a natural or even virtual setting. Due to territorial and regional differences in the diverse Saudi national environment there are arguably more opportunities for Saudi EFL students to interact with English speakers in larger cities such as Jeddah or Riyadh with a significant residential foreign community. Those from more agricultural based regions are physically denied such

circumstances. All learners are entitled to expect their university lecturers to design teaching methods more conducive to economic, not simply academic, needs by incorporating cultural and environmental learning contexts into teaching (Liu, 1998). The absence of such pedagogical imagination was indicated in discussions a major source of discontent, students blaming "ineffective" traditional teaching methods and perceived limited lecturer understanding of the language which inhibited learning;

> *I believe that the level of academic proficiency among teachers here in the university is not high. For example, a friend of mine took a summer course at King Saud University and noticed the difference between teachers here and there. The same applied for students there. He was then asked by a teacher: Where did you come from? Al-Imam University, my friend replied. The teacher was even surprised that our university has English teachers from Yemen, Jordan, Pakistan, India, and so on. Teachers from these backgrounds tend to pronounce English words in a wrong way, and may even fail to deliver information properly.* (Male student: 9)

They complained that some of their foreign teachers do not appear to have embedded knowledge about the students' culture or of the native language they present. This contributed to the student perception of a lack of contextual integration in their EFL learning (Florence, 2017). An example of a female student asserted that "*Although we are in a digital age where we cannot live without social media applications, there are teachers who still teach using old traditional method of reading texts and only practise in class. As a result, every semester, most if not all students encountered the same problem of changing the class to attend with a different tutor!*"

There was however some debate among students about who was primarily responsible for their learning problems, be it themselves for lack of effort, attention and motivation, or the lecturers, but the general conclusion was that the latter should exert more effort to improve the learning outcomes of their students. They should be making EFL more interesting and useful. It is evidently the students who are the source of perspective and awareness of how Saudi EFL learning can be enhanced by simply listening to their complaints. They are culturally or naturally reticent in offering criticism for fear of this being interpreted as a lack of respect yet societal and business stakeholders are the ultimate beneficiaries of improved outcomes from a more motivated workforce. The focus group feedback sessions assisted in overcoming these obstacles in a conducive learning exercise, affording access to a source of rich and meaningful views and ideas on pedagogical practices.

In terms of expanding language knowledge accumulation outside of the class room, albeit traditional curriculum directed at present, data revealed that students were skilled users of different mobile phone technologies. Nearly all had modern mobile phones with cutting-edge technologies at the time of the study and made considerable use of them in communication tasks with astounding regularity. Regular use ranged from basic functions such as making calls and SMS messages to more sophisticated ones that included photo and video capturing, editing and sharing, social media and chatting, mobile games, time management applications, and internet browsing.

Kolb (2012) believes that, because of widespread familiarity with these newer features, the present generation of students have significantly more opportunities to effect learning. The participant students in this study, almost to a person, were adept at uploading high quality

multimedia materials, both unique and interesting. Mobiles as Samsung, iPhone, and social networking as WhatsApp and YouTube have dramatically impacted on the way Saudi young adults exchange information about local incidents or phenomena. The observation in this study of the obvious enthusiasm for their beloved devices indicated use of mobile phones and social media was an indicator of social status as well as reflective of events that happened in the students' daily lives, a subject imbued with opportunities for further research.

6.2.1 Technical Obstacles to Mobile Learning

Uploading and downloading multimedia materials via mobile phone internet was however expensive for most students in the study, packages not yet achieving, in the anecdotal experience of the researcher, the low prices available in the West. Kolb (2012) argues that the cost factor becomes crucial when using social Web 2.0 sites that require substantial amount of data download, and therefore, impose more of a financial burden. Similarly, fast mobile networks such as 3G or 4G are usually more expensive than other slower networks and students with limited personal income were unwilling to spend more funds on the mobile phone internet (Nah, 2008).

Nevertheless, with a little effort and exploration, the students in this study indicated they were usually able to seek out Wi-Fi spots that provided faster free or cheap internet network access, except in more remote areas where faster networks were not available or where large-size file downloads proved slow and laborious. They were smart in implementing other free or affordable means of accessing social media applications such as Zero SM application, email and SMS notifications. Indeed mobile phone browsing of the internet on GPRS networks is painfully slow compared to faster networks such as 3G or 4G (Lally and Sharples, 2014). Some students in this

study only complained of the slowness when downloading large files rather than general browsing on their mobile phones. Their solution was to download materials on their computers rather than their phones and work on the material there, which somewhat defeats the purpose of the study into the value of mobile learning.

This was noted in comments of students at the beginning of the research programme, who were encouraged to access the more traditional learning materials via institutionally and home based fixed PCs. This was how they had been told to do their learning, both in-class and out, and had become habitual and familiar. Around Week 2 of the study, students began to realise the potential of their mobile phones for internet use as an effective replacement for out of class browsing and learning exercises and started to use it to collaborate via the social media application-platform.

There was little noted criticism by students in this study of such issues as limited battery life or device storage capacity (Cheung and Hew, 2009; Stockwell, 2008). Small screen size and keypad attracted only minor adverse comment, less significant than noted in the studies of Pettit and Kukulska-Hulme (2015) and Ally (2018). The students, it is fair to conclude, spent so much time on their devices they were accustomed to such limitations and had better eyesight than their older teachers. Thus the technical and practical difficulties raised by previous researchers appear to have been overcome and need no longer be considered easily surmountable articles.

Earlier in their education, and before the study, students used their mobile phones to look up words via mobile phone built-in dictionaries. Alshabeb and Almaqrn (2018) indeed noted this as a common practice in many EFL learning contexts. The participants herein did not elaborate on why they used mobile phone dictionaries in preference to hardcopy ones, but ease of

accessibility is presumed, and anecdotally, Saudi university students do not tend to carry many books or bags as they move from one lecture hall or class to another across the university campus. It is a simple, basic use of mobile technology and little emphasis is placed upon the practice in the development of new learning strategies in this research.

Outside of school, and between lessons, the participants indicated they immerse themselves in social networking and interactive websites (Kolb, 2008). Lenhart et al. (2015) found that about 87 percent of young students are online most of the time, anecdotally observed as being supported by just walking around the Wi-Fi connected campus. Emailing, instant messaging, and gaming are the leading mobile phone activities for young students (Kolb, 2017). Blogging, chatting, and music-sharing are some of their popular online activities (Rainie, 2016). Adept use and management of social networking websites such as Twitter and Facebook was noted (Botha et al., 2011; Awada, 2017)

All these activities were confirmed by the participants in this study, which bodes well for lesson design based on social media platforms, particularly with more than half of the group using SM application before the study was conducted. This included collaborating on open SM application pages that were launched to support their university needs.

6.2.2 Security, Personal and Cultural Concerns

Such was the proficiency of the technical use of the SM application facility, some students had set up a page encouraging the higher officials to dismiss the head of the university, reflecting an interesting range of views, albeit not pertinent to this research. Contributors in this collaborative exercise on open pages did not reveal their real identities, probably for fear of university

sanction. It was however observed as common on the open pages for learners to conceal their names and photographs, regardless of the purpose of the content.

There was nothing investigated in the Literature Review which explored the reasons behind "identity hiding" among students using social networking websites. Owen, Grant, Sayers and Facer (2006) suggest the reason may be that a person in cyber-world has the opportunity to be someone other than who he or she actually is. Indeed, even though actual names may be given, online social networking provides the users with more freedom to hide details about age, physical appearance and other personal details. Creating digital self-representation avatars has become a common online behaviour for many young people (Boyd, 2018). Such facilities are hardly pertinent to university monitored contributory sites, but there are opportunities to provide misinformation for reasons, perhaps, of shyness or embarrassment.

None of the participants volunteered such misleading conduct although some commented upon their preference for privacy in their study, learning and lives. This is an obstacle which the researcher noted to address should observations of Instagram activity contributions be limited, but it was not a significant problem. There was little scope for effective "identity hiding" especially in interactions with peers, and where some reticence was noted it was simply resolved by asking for more input with the assertion ‘everyone gets things wrong, and this is the quickest way to get it right’. This is less easily dealt with in a traditional learning, teacher to student context, where ingrained learner respect for even the least effective of teachers is expected. It is worth noting that at the end of the empirical study several students removed the teacher from their SM application friends list.

In the early stages of the first study activity reticence was noted on the issue of collaboration, and encouragement to interact was necessary from the researcher-monitor. Four students were particularly forthcoming in the meeting and explained they did not know the others in their group particularly well and did not have strong relationships with each other, so they preferred to communicate with each other in an anonymous way. Young Saudis in general are keen to maintain a degree of privacy in their social media activities in a conservative society.

The matter of "identity hiding" is more apparent and quite literal for female users of social media since the majority of Saudi women cover their faces when in the presence of unrelated men. Most of the students in the study chose photos or nicknames that represented idealised characteristics, occasionally those of charismatic persons that were taken from the internet. Nicknames generally represented the student's social group that s/he belonged to or that had some emotional connotation. It was not difficult for class peers to identify who was whom, given that Wiszniewski and Coyne (2002) noted when a social media user chooses to "mask" his/her identity, s/he chooses to reveal at least something of the subject behind the mask. Some participants in each of the focus groups, both male and female, explained they were just having some ‘fun’, making themselves more interesting. This was absolutely acceptable to the researcher who was however made privy to the real identities to enable data gathering and attribution.

6.2.3 Initial Concerns of the Student Participants about the DBR programme

Pragmatically speaking, students were ambivalent as to whether the implementation of mobile SM application would help them perform better in their mid-term and final exams. Students initially enquired whether SM application participation would give them extra marks or assist

with exam-related issues. This mirrors Greenfield (2003)'s findings in that although students may have an enjoyable learning experience with collaborative technology, they may feel sceptical about the potential of such technological intervention to improve their exam-related skills.

6.2.4 Conclusion

Students in this study were essentially expressing some doubt, or at least reticence, about the potential benefits of a novel, design based teaching process compared to a methodology of traditional teaching they had so stridently complained about in the initial questionnaire and meeting. They were advised that the learning would encompass the curriculum basis and they would miss nothing of the knowledge requirements, they were simply being invited to learn in a different way and advise the teacher what was working for them and what needed improvement. This led to an almost immediate change in perspective and nearly all looked forward to the opportunities. The researcher did hear a background comment of '*we'll see'*, in Arabic, but it did not seem productive to investigate who said that for fear of dampening the new atmosphere.

The broad view was that the use of the WhatsApp application was a "friendly" medium of communication shown by a noticeable reduction of inhibition in drawing the teacher's attention to learning and personal problems. The student-teacher relationship in Saudi Arabia starts from a fundamental of formality, the culture demanding young people to highly respect their elders, and the teacher has the ultimate arbiter of the truth of knowledge with control over exams and test scores (Algarfi, 2010). Arguing with the traditional teacher is unwise and university lecturers expect to be addressed as "Doctor", and certainly not included as a 'friend' on social media. The students in this study found the SM application platform created a new socio-cultural setting that

effectively helped to make their relationships with the teacher stronger and more intimate, breaking down traditional barriers particularly in EFL contexts. This aided the process of collaborative learning with readily accessible support.

6.3 Research question 2: To what extent does the use of mobile social media applications and mobile technology affordances promote English language learning, autonomy and collaboration in the context of the particular, traditional educational practices of Saudi Arabia?

This section will discuss findings on the positive opportunities that enhanced the implementation of mobile learning into this language learning experience and how students viewed the impact of this implementation on their learning. The Literature Review has noted that teacher-direction and presentation of knowledge is a major limitation in many EFL learning contexts, lacking opportunities for communicative use (Al-Hazmi, 2003, 2008; Chen, 2007). An abundance of literature shows that one of the most important benefits of technology integration is enhancing learners' motivation to learn the target language Warschauer, 2004). Many studies identify the advantages that technology integration can impart to language learning which they claim eventually boost learners' motivation (Sweller, 2003; Mayer&Mereno, 2003). Some of these advantages include enabling self-regulation and individualization.

Early research findings focusing on more student-centred and collaborative learning found that computers are effective in promoting and motivating student-centred learning through the involvement of students in their learning (Beauvois, 1997; Levy, 1997). Levy and Stockwell (2006) and Nah (2008) subsequently argue that students in a context of the provision of

cooperative learning conditions are able to play a crucial role in the learning design process enhancing engagement, interaction, and collaboration. Mobile social networking is a powerful pedagogical catalyst for the promotion of student-centred learning in the sense that didactic teacher or textbook-centred models are replaced by self-directed and personalised learning models enhanced by social media (McLoughlin & Lee, 2008).

In this study, it was evident that technology in general, and mobile social networking in particular, transformed this language learning experience into a more student-centred one. Although somewhat nervous at first, all students relatively quickly became participants in their own curriculum based, teacher-guided lesson and study design. The institution's mobile SM application effectively helped to transform the learning pedagogy in this EFL setting to promote students' autonomy and independence.

Based on statements of students who were interviewed early in the DBR programme it was clear that they were accustomed to the teacher-presentation and textbooks as the only accepted guides and sources of information in a typical or traditional learning situation. They indicated limited participation and collaboration opportunities were available for them in most language learning situations; "*We are rarely asked [by teachers] to participate or speak during classes.* (Male Student :3). There were few opportunities to practice English outside the classroom; *I've been to a restaurant and used few and short English sentences with a waiter from the Philippines.* (Female student: 1). From the researcher's anecdotal experience, EFL lecturers in Saudi Arabia usually start their classes by taking attendance and then spending most of the class time lecturing. At the end of each lesson, a few questions, sometimes rhetorical, are asked to make sure every student understood the lesson, and to inform of expectations for their exams.

Herein lies the development of the connectivist learning theory principles. Siemens (2005) set out a theory which he argues specifically addresses the concept and context of digital learning. It is not proposed to examine his argument that this is a separate philosophy of learning practice geared to explaining how technologically aware young adults are capable of autonomous learning. This has been dealt with sufficiently in the Literature Review critique, so whether one indeed considers it an off-spring of social constructivism or a stand-alone theory, the principles are nevertheless apposite to this DBR planning and future lesson development. Hence this Research Question is predicated on the value attributed to mobile learning by the adoption of the key elements of the theory, namely that;

- Learning and knowledge rests in diversity of opinions.
- Learning is a process of connecting specialised nodes or information sources;
- Learning may reside in non-human appliances;
- Capacity to know more is more critical than what is currently known;
- Nurturing and maintaining connections is needed to facilitate continual learning;
- Ability to see connections between fields, ideas and concepts is a core skill;
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities;
- Decision making is itself a learning process in choosing what to learn and the meaning of incoming information. (Siemens, 2005)

Each of these factors, practices and philosophies were embraced by the students in both the male and female groups in the conduct of the DBR activities. The teacher is no longer the major source of information and knowledge. It is digitally accessed from other members of the learning class community, outside sources, in this study, via SM application, and websites such as Wikipedia and online dictionaries. The learning design is an interaction between people and non-human appliances should "ensure that collaborative argumentation occurs in ways that

correspond to learning, and the collaborative development of understanding" (Ravenscroft, 2011:152). In this programme the researcher ensured that students could obtain accurate and valid information that fostered their learning, direction with a minimum of intervention, and guidance on the curriculum requirements of the time. Students in the current study were accustomed to the latest trends in instructional technology being provided or utilised or made accessible by their university (see Table 3.5, Chapter 3). It is evident from the comments made by participants in Section 4.4, Chapter 4, that they found mobile SM application to be an "anytime-anywhere" learning tool that enabled them to upload and review their reflections and learning contributions and to collaborate on them at their convenience. This ease of access was the key distinction between computer-assisted and mobile-assisted language instruction (Kukulska-Hulme, 2009).

The utilisation of informal social media platforms such as the WhatsApp application increased students' engagement with the learning task, and encouraged them to act positively and actively in this learning experience. It is evident that this not only motivated self-learning, but it was enjoyed by users. Mobile social networking also enabled the students to share their own learning materials and to reflect on them in a collaborative manner of exchange; this was undertaken in out-of-class activities.

The involvement of students' voices in the study via mobile SM application reinforced their decision-making skills by incorporating their feedback and reflections in the learning design. In addition, this aided the learning group, including the teacher, to work equally as coordinators, designers, and organisers of the learning process. It eliminated the student-teacher barriers from which most EFL traditional settings suffer, and created a mobile learning community of practice

and the level of student participation was high and constructive across both male and female groups.

The undertaking of a student-centred learning approach to education necessarily means the teacher and textbook roles are limited in favour of self-regulation (Chang, 2005), student-generated learning (Kukulska-Hulme et al., 2007) and self-directed learning (Nah, 2008). The students in this study broadly expressed satisfaction with the control such approaches to language learning provided, with the reassurance that they were fulfilling their curriculum obligations. Learners particularly in the Second Iteration of the DBR programme adopted a self-regulated learning design in which they self-observed and self-evaluated their effectiveness commensurate with the increased level of responsibility for their own learning and assessment of each other (Chang, 2005).

Section 5.4. in Chapter 5 indicates that the participants understood and embraced mobile phone technologies and the WhatsApp assisted the students to produce their own learning materials from their everyday interaction in the extra-classroom context. Moreover, Capture 6.1 shows that the students also uploaded to the application some of the textbook exercises that they thought were important. They were making choices on what they deemed important to the furtherance of their learning and thereby assisting each other, integral to the principles of connectivist theory. They generated and incorporated local and contextual themes and connected them with in-class topics, meeting their particular language interests and enhancing connections between classroom activities and the outside world of knowledge, as shown in Section 5.4.1.2. The "anytime-anywhere" characteristics of mobile learning evidently promoted self-directedness and helped them to manipulate their participation at their convenience.

As far as student-generated content was concerned, findings presented in Sections 5.5.1 and 5.5.2 highlight that such learning not only supported collaboration and a community of practice among students, but it also fostered their individual creativity and competitiveness. Kukulska-Hulme et al. (2007) describe such user-generated activity as mobile-based cultural citizenship activity, in which students involve everyday life situations in their learning and transform that into engaging learning experiences. There was no appreciable difference in the data and observations between the genders.

6.3.1 Design-based research and student-centred Learning

A practical framework developed to conduct this study, designed to foster and guide more student-centred learning practices, provided opportunities for EFL students to evaluate and reflect on their own learning experience. In order to make the implementation of student-centred learning successful, learners had to appreciate their own contribution to the learning and lesson design, confident that their contribution was valuable. The design-based research has been found to be a powerful research tool that not only incorporated student voices and contributions, but provided iterative guidelines of testing and refining any educational intervention in real world settings (Design-Based Research Collective, 2003).

It was anticipated from the Literature Review and indeed from the researcher's awareness of Saudi student thing from experience as a teacher that active learning through the social media mobile technology, including peer cooperation, may be met by resistance in some students. Given the standard teaching background of treatment as receivers of knowledge some may not be ready and prepared to adopt such a new proactive approach to activity-based learning. This

anticipation was generally supported by a previous Saudi study that found that not all welcomed the introduction of a new student -centred approach (Algarfi, 2010).

It was observed in the current study that students, particularly during the first two or three weeks, were not that keen to participate in the classroom (see Table 6.1). Utilising the design-based research programme would increase student participation in both classroom and SM application discussions, being made aware of the importance of their own contribution and reflection on the learning design, shaping and analysing the lesson programme (Barab and Squire, 2004). They expressed curiosity, with a small number in each group wondering aloud if it meant more work for them, others asking about consequences of disagreements or suggestions which the teacher did not accept as appropriate. The researcher struggled at the pre-task focus group interview to make the students feel comfortable and express themselves freely.

It is believed this was due to their resistance to change from the one-way passive learning method with which the students were accustomed. The researcher had to spend a considerable amount of time with the students before an informal student-teacher relationship was developed, allowing for more accurate feedback to be elicited from the participant students. This corroborates with Wang and Higgins' (2006) findings who report that they had high dropout rates in students taking an online course. This means that simply using the mobile phone for learning did not convince the learners to continue learning English. Interviews with some of the participants in phase one revealed lack of motivation to expend additional time and effort to learn English outside the classroom, since they did not feel the need to learn. English was merely a subject that needs to be passed in order to move on to enroll in a desired Arabic specialty

afterwards. Others could not perceive a link between the mobile phone and learning, which they see as predominantly invented for social communication.

The data, both in feedback form and observation, revealed students in the current study not only collaborated on a language learning task, but were also able to test and refine the design principles embedded in their learning practices in their discussions with the researcher. Effectively students worked together, online, to reflect on the activity learning design and then generate more student-centred learning activities ideas after a short period of reticence as trust was built between the teacher and student in the course of practice.

6.4 Conclusion

Although some students may have developed their involvement in the DBR through a pre-existing constructivist approach to learning, others, after years of traditional teacher-presentational learning will have adopted more active involvement in planning their knowledge accumulation. Behaviourist orientations were interpreted from the comments of a significant proportion of the male and female groups, with those describing changes in their knowledge management practices changing to accommodate involvement in the DBR programme, be it constructivist or connectivist. The role that mobile SM application played in learning contextualisation is discussed in more detail in the next section.

The students indicated in their post-study feedback that they had enjoyed the experience and sense of control, although the impression was received that this enthusiasm could be lost without continued guidance and input from an empathetic teacher, This was not specifically phrased by either group, but two students in the male group and three in the female indicated they would miss the programme now that it was over.

6.4.1 Collaborative learning in Mobile Social Media

As described in the Methodology, collaborative learning was implemented through the projects that the students completed together in small groups, task-based in nature. It has been noted by researchers that communities of practice and learning have assisted students and teachers in identifying how learning outcomes can be improved in a collaborative, enjoyable and thus motivating manner, especially

i) through informal group discussions on WhatsApp,

ii) with learners freed from formal learning and teaching environments,

iii) thus improving self-confidence and independence

iv) in the collaborative building of one's vocabulary bank,

v) rather than simple reliance of teacher instruction;

this then aids improved performance (Wang and Ma, 2017). This, it has been noted, was not an activity undertaken by the participants herein.

Students need education and guidance, with input from a forward-thinking teacher, to develop their own class based, tutor guided learning group, to supplement the limited class teaching time, before moving onto the global learning orbit of the online ESL community. Focus on extra-classroom, use, testing and outcomes from use provide a more cogent basis upon which to assess value with the simple question, 'does the device and software improve outcomes in curricular based tests when compared to classroom presentation alone?' If the answer is 'yes', there appears no logical reason for resistance to use. That was shown in this study, the proof lying in enhanced test performance. The teacher has a role in promoting motivation through

encouragement, feedback and their own overtly expressed attitude to device use.

It was explained that they should use social networks to access information and assistance from each other, and carry out work on the tasks, constructing their own linguistic knowledge. This particular course was previously adopted in the constructive learning literature of Berge (1999) and Neo et al. (2007). The teacher-researcher role changed from that of the expert and source of knowledge to a facilitator who manages the transformation of information into knowledge. Project-based learning is considerably enhanced when information resources such as the Web provide access to multiple perspectives beyond those provided in the traditional class textbook or the limited school libraries (Cummins, 2010). He indicated,

> These projects stimulate students to read extensively in a wide variety of genres and to process what they read in such a way that alternative perspectives are analyzed, inconsistencies identified, and problems resolved. Students gain access to comprehensible input, and they use higher-order thinking skills to transform this input into critical literacy (Cummins, 2000, p.542).

During feedback discussions at the end of the classroom sessions with the students to analyse progress a male participant stated *'The thing I liked about this experience study [uploading photos and videos]. It is not only that I searched about something I liked and chose myself, but also I discovered that I learned more English as I completed my search'*.(Female Student: 9).

The collaborative projects in the present study helped to promote self-directed learning, envisaged by Felix (2005) and Zimmerman and Tsikalas (2005) as most effective in small groups. While the students were completing their research and preparing the written parts of their projects, they were able to identify their own mistakes in writing and correct themselves via the

feedback that the word processor program provided and asking each other for advice and commentary.

During the group discussions, the learners gained their own practical training and practise in oral conversations with their group members, improving, according to their post class meeting feedback, fluency in speaking. This increased confidence to prepare for their final project presentation through prior identification of errors within a less stressful learning, encouragement and feedback environment of peers. It improved proficiency was evident in the quality of the end of project presentations, with learners developing different linguistic and communicative skills. This in turn was, it was mentioned in feedback sessions in both the male and female groups, a result of working on tasks they were interested in, be it local events, the environment or social activities. Such personalisation was achieved in the context of curriculum learning, and indeed the students expected this to be so, with enquiries from participants in each gender group asking at the beginning of each what they were '*going to get out of this'* insofar as their qualifications were concerned. It also aided engagement and motivation (Benigno, Bocconi and Ott, 2007; Koper a Manderveld, 2004). A male student commented '*WhatsApp and Instagram were very enjoyable because we had the option to choose which topics in the second Iteration we would like to search and discuss about'* (Student :7)

Student engagement was evident in their presentations, when some of them posted about their favourite team players and materials that were well beyond the required presentation. They enjoyed sharing, in English, stories which interested them, indicative of a broadening of language use skills in learning selection, positively impacting, it is suggested, on curriculum learning. This is an anticipated effect of connectivist practices. During the project sessions, the

researcher noticed a significant level of enjoyment, even fun, expressed to accompany evident excitement while the groups were discussion in class, working on their projects and experiencing revelatory learning.

Each of the projects required the learners to negotiate different steps through which they accomplished the intended learning objectives. They had to do extensive reading and writing, listen to and viewing multimedia clips on the Web in order to improve communicative fluency as well as knowledge accumulation. Unlike traditional edited textbooks, the collaborative projects offered the students authentic texts in real-life situations. The collaborative projects exposed the students to various styles of text and consequently provided models of multimodal text they could use in their own projects. The findings of the Second Iteration feedback indicated that the students were now comfortable with collaborative learning, motivating learning from each other, asking questions and receiving peer feedback. The participants' behaviours in the current study are similar to the participants' behaviours in many other studies investigating the impact of mobile phone learning on learners' achievement (e.g. Sharples, et al., 2016; Sam, 2016).

6.4.2 Authentic and culture-rich materials

One of the major concerns students raised in the pre-task focus group was that the English course had limited teaching resources, generally limited to online versions of the curriculum text. One of the aims of the mobile social media task based course was to include authentic contextual materials that reflected the real use of the language as spoken and practised by people in their daily lives, be it the students in translating the terminology or native English speakers. While the textbook in the traditional classroom included reading texts that were in the target language, the

study data gleaned from learner comments indicated such basic materials neither motivated the learning nor did they reflect the real use of the target language.

One of objectives in this DBR MALL course was to assist students learn about the culture of the target language in order to facilitate understanding and effective communication. As Magnan (2007) pointed out, goals for language learning are (i) the ability to communicate with peoples of other cultures, (ii) understand and be sensitive to other cultural differences, and (iii) analyse critically content and ideas from other nations. The participants in this study all commented that they had no chance to communicate with native speakers of the target language, so the DBR programme of tasks aimed to incorporate realistic, albeit virtual experiences of cultural beliefs, action, interaction and communicative techniques;

> *during the course I learned not only the language but more importantly about the people and the culture of the language we are learning. They have different ideologies and their way of thinking is very different from ours, they are more frank and direct.* (Male Stuednt:9)

The Saudi traditional cultural and religious restrictions on accepted knowledge outlined in Chapter 5, Section 5.1.2, were accommodated by effective selection, screening and researcher evaluation of the materials to be implemented in the DBR programme whilst preserving the integrity of the contextual concept. Attention was paid to the standards for foreign language learning developed by the American Council of Teachers of Foreign Languages (1999) asserting:

> *Cultural understanding is an important part of world languages education. Experiencing other cultures develops a better understanding and appreciation of the relationship between languages and other cultures, as well as the student's native culture. Students*

become better able to understand other people's points of view, ways of life, and contributions to the world.

In the feedback sessions and at the end of study de-brief, a high level of satisfaction with the activity programme was addressed by all participants in each group, a few being wary of their anticipated return to traditional teaching methods.

6.4.3 Learners' Attitude toward Smartphone Application for Vocabulary Learning

The 'learner attitude' factor of the aims and objectives investigates the extent to which students embrace the introduction of their technology tool of social, business and economic interaction into the education sphere in Saudi Arabia, and this clearly depends on evidence of its value. In Kuwait, Dashti and Aldashti (2015) surveyed students at the college of Basic Education and found a high number of participants indicated considerable positivity in attitude to the use of their phones in vocabulary learning. They appreciate the use of a mobile app supplemented insufficient class time, allowed them to prepare their own learning plans and carry them out at a time which suited them, without fixed institutional restrictions.

In this study a student 7 commented:

'smartphones are available all the time whenever I find a new word.'

Alwraikat (2017) focused on teachers and learners in Oman and the United Arab Emirates, and found a similar level of popularity for mobile learning, predicated on the same bases as those outlined by Dashti and Aldashti (2015). It was noted in Chapter 1 the cultural and institutional reasons for concentrating this research on male students, and concerns were stated by the author that these may undermine the findings given the exclusivity of gender. Alwraikat (2017)

however noted in his research that there was no significant difference when the study involved other factors such as gender, specialisation and level of study. In Islamic based Morocco, Omari *et al.* (2017) too found no divergence in the value recognition of mobile app benefits to vocabulary learning by gender, age and education level. In this study of Saudi students, for institutional faith reasons, the research had to be restricted to the male campus of the university. However, the findings of student perception of value of mobile learning correlate closely with those of Dashti and Aldashti (2015) and Alwraikat (2017). According to Omari et al. (2017) the findings will apply regardless of gender.

Al-Fahad (2009) found having examined the attitudes and perceptions of the effectiveness of mobile learning among 186 female students at King Saud University; women undergraduates are no less enthusiastic about progressing their education and vocabulary learning than their male counterparts in a separate part of the campus. Smartphone technology improves their education outcomes. They embrace this opportunity; any limitation or differentiation on its provision, it is suggested, can only come from their teachers.

This study presumes that attitudes to mobile app use for supportive learning apply broadly equally to the male and female schools of English education at Imam University. Essentially, there is a dependence for communication, information access and life planning on the ubiquitous smartphone;

'I have many applications like Twitter, WhatsApp and Instagram', said student 11.

Autonomy of learning through applications which lack the inherent control of teacher input may arguably be perceived in the context of traditional Saudi institutions as a threat to authority,

undermining respect for the role of the teacher. There was no complaint or adverse comment made by any student in this research to suggest this. They concentrated their evaluation of mobile learning on its supportive role. It is clearly considered to be of value to and by students in this study, so it appears obvious that it needs to be adopted into teaching practice.

6.4.4 Traditional and Cultural Influences

The findings of this study relating to the nature of app use supports the implication that in the Saudi education framework the perspective of the teacher is integral, at least in part, to the success of autonomous learning. Simply, when the teacher accepts the technology, it is easier to convince students to apply it. Research is therefore necessary to focus on the socially constructed perspectives of Saudi EFL teachers to understand what factors affect attitudes and training, and the implementation of their beliefs in their classrooms. The issues have a significant base in culture, both local and national. Alfahadi (2012), for example, has reported that teachers were particularly concerned about what they regard as lack of alignment between textbook content with cultural and social values in their locality.

In its application to mobile learning, with its greater inherent capacity for limiting cultural influences, this can potentially undermine the value placed on the use of the tool. Many of the students however, without prompting, searched other, mobile, digital sources. It is a habit to be more formally and effectively harnessed by teachers in guiding learning. Baker *et al.* (2007), it has been noted, assert that:

(i) Saudi Arabian culture is founded on gender segregation.

(ii) suggesting that men have more flexibility in the sharing of ideas more freely than women,

especially where personal learning needs are explored.

The implication is arguably that women will be inhibited in learning opportunities available to males in EFL mobile communities due to local and national cultural imperatives. This is not borne out by the other researchers identified and it is therefore appropriate to conclude that the cultural limitations of the study will not of themselves undermine the cogency of the findings.

There are instances evident in this study where entrenched learning habits are the bar to the embracing of 'technological assistance' in their learning:

i) one interview participant in particular commented that WhatsApp was very useful when looking up words but the "pen and paper" was more helpful in memorising it

ii) another stating that the application was not much different from a dictionary.

Some students will always prefer their traditional way of learning vocabulary, perpetuating a reluctance or resistance to change, and this too must be accommodated by teachers. It raises concerns for how the success of the Vision 2030 plan for paperless learning will be calculated, because in part

i) behaviourist learners should not be disadvantaged by their reluctance to embrace technology, which must be viewed, in all its forms,

ii) as a support to learning, not a replacement of teaching;

iii) change and growth is good, but not for its own sake,

Whilst the traditions of Saudi Arabian learning may appear retrogressive to outsiders, it has

worked, and simply needs amended and restructured, not replaced. This has been the focus of this study and its results bear out the assertion that

i) whilst the smartphone app is considered easy to use and a valuable learning tool by most students,

ii) the needs of all learners have to be accommodated; at the very least,

iii) purely behaviourist learners may react well to the device where they are

iv) appraised by their teachers of its value and effect on their results.

There is some argument that the nature of Saudi faith tradition and practice in the social and education sphere make culture an obvious, overt resistance feature in effecting change. As a teacher in a segregated institution in Saudi Arabia the researcher has an acute awareness of the cultural expectations of the education process, and these have been taken into account throughout the study process.

According to the research of Van Praag and Sanchez (2015) teachers only broadly accepted app use as good for making notes and information retention tools in an isolated context; otherwise they were deemed a nuisance and distractive. This was not supported by this study, given that the mobile devices were only used as extra-classroom learning support devices. It is hoped that the general acceptance by students of its value will stimulate a more productive attitude to supporting teaching and learning.

Korucu and Alkan (2011) suggest that despite all the challenges that educators believe will arise with the use of mobile devices in the classroom, the devices would soon enter the building. It is

fair to say that the technology does not of itself put social and religious values at risk; it is the lack of management and direction and indeed it did not occur to any respondent to suggest this compromise, even in a faith led university. Mobile phones do not challenge culture, but the software does improve outcomes.

6.4.5 Out of class contextual learning

The external context of the learning setting offered fertile soil for this learning experience to be authentic and well-contextualised. It was mentioned in Chapter 4 that people from Najd (Centre of Riyadh Province), or the north or south of Saudi Arabia belong to a variety of ancient tribes, and that adherence to tribal ties and relationships and the high sense of belonging to hometowns are basic characteristics of those people. Although geographically close, the population of this region of Saudi Arabia has a variety of different lifestyles, ranging from mountaineers to the inhabitants of the desert or the coastal areas. Culturally, this results in regional adaptations or variations of folklore, as well as protocol for weddings, parties, guest welcoming, condolence ceremonies, and so on. Linguistically, the inhabitants of this region speak conservative Arabic dialects that differ from one geographical area to the other (Headley, 2007). It was anticipated before the study was conducted that the semi-multiculturalism and diversity of this population would provide meaningful opportunities for the students to implement various contextual and cultural norms into their learning, and this was the case. Students incorporated all these different cultural aspects into their language learning experience (see Sections 4.4.1.1, 4.4.1.2, and 5.4.1.1). Diversity of cultural behaviour and cultural representations among students, as the quote in Section 4.4.2 showed, enhanced their curiosity to learn about each other customs, and

increased their motivation to collaborate on interesting and enjoyable topics. The diversity of students' backgrounds and opinions can substantially improve learning, as connectivists claim.

One of the connectivist implications is that knowledge is rapidly changing and that students should have the ability to update their knowledge and abandon irrelevant information. Downes (2006) argues that network-based learning enables students to keep their knowledge current in a rapidly and constantly developing environment. Given that the outside context has rich and changing information, the context can then enrich students learning with valuable and interesting pieces of information that create more collaboration opportunities. Students in the current study were able to follow the most updated "contextual" information and collaborate on it. Students also became decision makers by incorporating reliable knowledge and simultaneously ignoring the knowledge that did not pragmatically relate to their learning experience. Students were responsible to identify appropriate and inappropriate information and resources; they indicated in the interviews that some information was not educationally suitable. This is in line with Williams, Karousou, and Mackness (2011), who agree that freedom and openness in such a learning environment need to be "counterbalanced by constraint and inclusive values" (p. 45). Thus, networked learning should be responsive to the learning context in which learning is taking place. Hence, it was important to ensure that, ideally, an appropriate use of the internet should be maintained in a networked learning environment, as emphasised by connectivism (Ally, 2008). Specifically, teachers need to ensure that no explicit sexual materials are being used in an online environment. Students should also be able to distinguish between casual versus learning uses of online social networking. Indeed, one may argue that the divide between formal and informal uses of social media might be invisible for both students and teachers. Yet, it is the

responsibility of the teacher to help students to effectively extend their learning across formal and informal settings. Being more selective and responsible for one's online behaviour are skills that today's students need to learn.

In addition, the integration of local cultural norms into the learning design assisted the students to collaborate with each other in the target language (see Captures 4.2 and 5.2). Specifically, students learnt how real-life issues could effectively be incorporated in both their in-class and out-of-class language learning. Students, for example, learned about cultural and geographical aspects, with which they were unfamiliar prior to the study. Authentic and meaningful dialogic engagement was also maintained in a way that not only promoted the practical use of language outside the classroom, but also pursued the students' own interests. Hence, it is important to note that the disengagement between the actual learning process and real-life situations in this EFL context was minimised by incorporating local cultural themes.

Other learners who participated in the intervention revealed that technology integration further motivated them to learn English as it enhanced their learning experience significantly. These findings are supported by and align more closely with a body of literature in this area (Awada, 2017; Keogh, 2017), which indicates that learning a language in that mobile learning can be enjoyable, and practical and can provide rich out of-class learning opportunities that cater for students' collaboration and knowledge construction. In addition, Schrock's (2015) suggests that mobile technology and social media can provide a powerful connection between formal and informal learning contexts, that is, in-class and out-of- class settings. This also reflects the argument of Wong et al. (2011), who found that mobile learning enabled students to identify contexts from their daily life and associate them with their learning. These previous studies have

shown that mobile learning can bring the outside context into the classroom. Indeed, this study also showed that students developed their own interests and abilities to create learning resources that reflected the learning context and students' own choices. Examples of learning resources created by the students included topics that were relevant to the classroom discussion and information obtained from other online resources or social media.

The utilisation of tools with which the students were already familiar, such as mobile phones and WhatsApp application, played an important role in maintaining authentic learning opportunities outside the classroom. Thus, it is important to point out that using familiar learning tools saves time for both students and the teacher, as it does not require time for additional training. This study, for example, implemented two intensive iterations of a learning design inspired by design-based research over one semester, where it was hard to dedicate time for training.

The role that mobile learning can play in enhancing context-awareness as well as the sense of community has also been addressed by several researchers (Herrington and Herrington, 2007; Kukulska-Hulme, 2009; 2010; Kukulska-Hulme et al., 2017). Section 4.5.2 highlighted how mobile learning not only stimulated collaboration and interaction between students, but it also enhanced their context-awareness about their surrounding environment. Moreover, students collaborated on interactive learning tasks and created a mobile learning community with members of their class group. This was important for the students since relationships among Saudi students, in general, are not usually strong, and utilising a student- centred approach can strengthen student-student relationships, trust, and respect (Algarfi, 2013). In contrast, mobile individual assignments, as Nah (2008) found, do not allow students to communicate or share ideas collaboratively.

Social media applications increased the students' preparedness to participate in group-based collaborative EFL instruction, which was a new learning paradigm for most of them. As discussed in Section 4.4.3.2, mobile SM application maintains informal and non-distant student-student and student-teacher relationships, in which the teacher was considered as an equal member of the group without the absolute authority or dominance that traditional EFL teachers usually have. Once again, the more the students are familiar with/interested in the learning tool they are using, the less likelihood of resistance to using the tool is expected. This argument is supported by the findings of Nah (2008) who found that students expressed feelings of boredom while using an unfamiliar mobile website designed for his study. The other limitation of such less-collaborative websites, as he also found, was that text-based-only mobile content was also boring for students. Thus, the present study found that the incorporation of both contextual multimedia-based and text-based materials, via a familiar medium like SM application, played a crucial stimulative role to maintain the students' interest in the learning task. Moreover, the data revealed that contextual mobile application discussions enhanced the students' competitiveness and selectiveness. In other words, each student was challenged to make his SM application contribution as unique as possible.

According to Kukulska-Hulme and Arcos (2011), the interaction with the online environment via mobile social networking enhances students' sense of belonging to the language learning community. They also argue that mobile social networking offers more repetition, practice, and self-monitoring opportunities for the students. Moreover, mobile social networking may entail new learning strategies that align "language practice with the small routines and unexpected opportunities of everyday life", and thus, "mobile learners exhibit conventional language

learning behaviors like memorising vocabulary, while at the other end, they create their own agendas, networks, resources and tools" (Kukulska-Hulme & Arcos, 2011, p. 76). This argument raises the fact that the students in the present study were exposed to a variety of social networks in addition to the learning group, and these offered them extra connections to other learning resources. For example, it was observed that, in a discussion on a local terminology, an uploading student consulted some of his SM application friends online who belonged to the same area about other synonyms for a particular term. Hence, it was evident how mobile SM application helped the students to effectively connect with other people who shared similar interests, and how the sharing of ideas and knowledge enriched the discussion. Thus, more collaboration opportunities for English language practice were maintained.

Findings are also a practical representation of connectivism in the sense that "learning may reside in non-human appliances" (Siemens, 2005, para. 26). Thus, it can be argued that person-technology and person-person communicative interaction and the construction of knowledge across multiple contexts can effectively be promoted by mobile social networking. Online dictionaries and mobile access to the internet were examples of beneficial non- human sources of information.

In summary, the data revealed that mobile social media application enhanced the transformational shift for this EFL context from a traditional decontextualised learning condition to a more contextual one. Local and contextual elements were incorporated in a way that not only promoted students' collaboration, but also eliminated the barriers between in-class learning conditions and the external real-life settings. It was evident from the data how the surrounding environment created meaningful and authentic learning opportunities for English practice, and

provided rich student -generated learning resources, and how mobile social media application facilitated this process. It was the students' previous familiarity with mobile phone technologies and social media as well as their preparedness to change and adapt that made this transformation successful. Overall, these findings not only illustrated the potential of mobile WhatsApp application to improve EFL education in general, but also demonstrated the willingness as well as readiness of EFL students to embrace these innovations to overcome their own learning difficulties. It was also discussed how design-based research provides fertile soil for this transformational process to grow successfully. The impact of design-based research on testing and generating design principles for mobile language learning is discussed in the next section.

6.4.6 The impact of the affordances of MALL usage on learning

In line with the literature concerning mobile phone use, the participants in the current study identified several mobile phone opportunities that distinguish mobile phone learning from classroom learning. These are introduced in order here, starting with the affordances that participants found most useful first, before moving onto those considered the least important. These are Interactivity, Portability, Accessibility, Multimodality, Immediacy, and Availability.

The majority of the participants in the current research found that mobile phone learning provides a better opportunity for a group of learners to interact and learn collaboratively, more so than in the regular classroom. The participants' positive attitudes are congruent with many researchers' views about how the communicative affordances of mobile phones serve learning (Conole and Dyke, 2004; Lloyd, et al.; 2007; Schrock, 2015). For example, Conole and Dyke (2004) state that communication is the most useful affordance as it has the potential to engage

learners in collaborative learning. That is, in their opinion, users are engaged in longer virtual discussions that encourage reflection and critiques when compared to real-life classroom discussions. They also refer to learners' ability to save conversations and go back to them when needed - an advantage that cannot normally be found in the regular classroom context. The participants in this study confirmed that this feature of being able to save information is of great importance as it allows for revisiting the discussions at personally convenient times.

Research into the communicative approach to language teaching, which states that social interaction is essential to language learning, supports the findings of this study (e.g. Hall & Verplaetse, 2000; Lantolf, 2000). Proponents argue that the dialogue between group members is more authentic, interesting, and induces lower levels of anxiety. When compared with computer tutoring programs, learning by social interaction is arguably more authentic and enjoyable for many, as well as being potentially more meaningful, as learners are interacting with real people rather than a computer. These findings on the opportunity for such interactivity align with the literature, which indicates that technology facilitates new forms of learning through the use of dialogue and communication. This in turn creates new forms of communities in a virtual environment and new means of sharing knowledge (Conole & Dyke, 2004; Atkinson, 2008; Schrock, 2015). This also correlates with the notion of a Community of Inquiry, which is discussed below to provide a more comprehensive picture of how communication takes place among groups and how this leads to learning.

The second most important mobile phone affordance reported by the majority of the participants in the current study, that facilitates their learning and distinguishes it from traditional learning, is

that of mobility. They reported that the high portability of the platform due to its relatively small size and light weight gives it an advantage over a traditional heavy textbook or a fixed desktop computer. This is consistent with the literature on mobile phone affordances, which indicates that learners learn on the move since they can gain a piece of knowledge in one location and apply it in another (Conole & Dyke, 2004; Burden & Atkinson, 2008; Schrock, 2015). This advantage, as they explain, makes learning more attainable since they can learn whenever and wherever they desire throughout the day. This also connects to Sharpels' (2006) assertion that mobile technology better interprets how knowledge and skills can be transferred across contexts, since people increasingly try to accumulate learning during gaps in the day while on the move.

In addition, the mobility feature enables students to learn away from their usual environment. That is, the data has revealed that busier students who would normally find it difficult to find the time to sit and study vocabulary used this feature. They explained that they could learn away from their usual places of study; for example, some students navigated the WhatsApp group whilst sitting in the car, while queuing, or while waiting in a doctor's clinic. This conforms to Sharpels' (2009) studies which show that by using mobile technology, learners learn outside their official setting (such as in a friend's house, or at places of leisure or worship), which led him to conclude that there is no consistent connection between topic of learning and location of learning. The learners in this study, similar to many other learners who use mobile technology, reported that the feature of mobility provided a sense of control and thus enabled better use of potentially wasted time, and allowed them to study at their convenience. This conforms to Laurillard's (2007) assertion that the mobility feature of new technologies motivates learners as it gives them a sense of control over their learning.

Similar to the findings from previous studies (e.g. Conole & Dyke, 2004), learners in the current study found the affordances of immediacy a significantly useful feature that distinguishes it from traditional learning. It allowed for immediate responses to entries and queries from friends and teachers. The learners in this study found this feature particularly useful as it gave them a feeling of 'connectedness' with other social group members. That is, they explained that whenever they asked a question, a friend or a teacher was there to reply. They gave some key words to describe the immediacy of mobile phone learning like "on air" and "life" which reflects that they are always connected (see 5.3). The notion of connectedness, or feelings of involvement, is referred to in the mobile phone literature by Rettie (2003), who states that the feeling of connectedness achieved by mobile phone immediacy, allows learners to be aware of each other; strengthens online social bonds, and is the determining factor in making choices from among different online communication options. Similarly, the learner interviewees in this study, reported that immediacy is one of the advantages of the WhatsApp application over other online applications such as email, since the immediacy provided by WhatsApp promotes better and easier connectedness as logging on each time not necessary.

Rettie (2003) relates the notion of connectedness in a mobile environment to social presence. He explains that the awareness that others are online gives a feeling of connectedness even when there is no message exchange. This, in turn, could provide a further explanation of how learning is supported in the current study. In other words, learners in this online social group always feel connected because other social group members are potentially available to give immediate responses. Furthermore, Ijsselstein et al. (2003, p.927) propose an awareness model in which connectedness and social presence are complementary. In their awareness model, they suggest

that although the level of social presence may be low, the feeling of connectedness can still be strong, which proposes a sense of keeping in touch, sharing, belonging and closeness (ibid). In this study, a further group of students preferred to lurk when they could (not contributing and without any pressure to reply immediately) but were seemingly benefitting from both synchronous and asynchronous chat.

Availability is another mobile phone affordance mentioned by several of the participants in the interviews. This allowed them to maintain communication but moderate the distraction and regulate the intrusiveness caused by mobile phone learning. That is to say, the participants appreciated the potential to turn on/off the mobile phone and the push/pull alert notification (of messages) so as to be better able to govern possible intrusiveness and distraction. Some of them stated that they chose the pull notification mode so that they could read messages later at a more convenient time. Other groups of students kept their messaging alarm always on in order to always know what was being sent. This connects to Schrock's (2015) explanation that the affordance of availability gives mobile phone users the choice to be perpetually connected, partially connected, or disconnected, according to the user's comfort zone. Therefore, as he states, "Individuals strategically draw on the affordance of availability to produce gradations in how they might be reached" (Ibid p.1237). The participants in the post-task focus group reported that the affordance of availability motivated them to learn by using their mobile phones. It gives them a degree of control since they can pull information when needed and learn at their own pace. This finding also conforms to Sorgenfrei et. al. (2013) who presents a taxonomy exploring different degrees of control that learners might have in an educational setting which integrates technology; they put timing and pacing control at the top of their taxonomy.

Furthermore, the participants pointed out that the additional functionality of WhatsApp includes the auto-correction of spelling mistakes while typing. The learners also used the audio feature to convey their thoughts faster instead of texting if they wished to overcome problems with digital literacy. They searched online for authentic resources and imported multimedia to enrich their conversations.

6.4.7 Motivation to learn English

Examining the influences related to motivation to learn English was not initially one of the objectives of this inquiry. However, on investigating the reasons for participants' excessive withdrawal from the intervention in phase one, it was discovered that participants' lack of motivation to learn English was a key factor which deterred them from proceeding with the mobile phone learning intervention. Therefore, the next section looks at the impact of motivation on social learning via mobile phones.

6.4.7.1 The impact of language learning motivation on online social learning

An abundance of literature shows that one of the most important benefits of technology integration is enhancing learners' motivation to learn the target language (Warschauer, 2004). Many studies have identified the advantages that technology integration can impart to language learning, which it is claimed, eventually boosts learners' motivation (Sweller, 2003; Mayer&Mereno, 2003). Some of these advantages include enabling self-regulation and individualisation. However, the findings of this study go beyond a simple relationship between technology integration and motivation, as described below.

The findings from the first phase of this study largely show that interest in mobile phone technology was insufficient to induce students to continue learning English via mobile phones. That is, although most of the participants in the First Iteration showed a general interest in using mobile phone technology in daily socialisation, they were a bit hesitant to participate in the chat group that followed from the second week onwards of the intervention. This corroborates with Wang and Higgins' (2006) findings, as they report that they had high dropout rates among students taking an online course. This means that simply using the mobile phone for learning did not convince the learners to continue learning English. The interviews with some of the participants in phase one revealed a lack of motivation to expend additional time and effort to learn English outside the classroom, since they did not feel the need to learn. English was merely a subject that needs to be passed in order to move on to enroll in a desired Arabic specialty afterwards. Others could not perceive a link between the mobile phone and learning, which they see as predominantly invented for social communication. Accordingly, it can be concluded that motivation to learn English can significantly influence participants' attitudes and behaviours towards mobile learning, and that learners should be sufficiently motivated to learn the language before trying new methods.

Other learners who participated in the intervention revealed that technology integration further motivated them to learn English as it enhanced their learning experience significantly. The findings from these students align more closely with the body of literature in this area (Sweller, 2003; Mayer & Mereno, 2003; Warschauer, 2004; Keogh, 2017), which indicates that learning a language using technology can be enjoyable and practical. This latter group of learners feels that WhatsApp allowed them to have more space to share opinions in an anxiety free environment

without being graded, which eventually motivated them to make further contributions and create more hypotheses about language.

6.4.8 Learning and teaching in an online social environment

Data generated from the analysis of the content of the WhatsApp discussions, as well as learners' views on how they learned, provide ample insight into how learning is constructed. We can assume that learning took place on two levels: the vocabulary lessons sent by the teacher that originally constituted the primary input (content) and the social interaction in the chat groups.

The WhatsApp group interaction offered a space for learners to build upon and expand knowledge which I argue is a key tenet for learning. In these interactions, students' attention proved to be mainly focused on understanding the message. This supports Coady and Huckin's (1997) suggestion that typical vocabulary learning exercises are not necessarily vocabulary builders. In this research, students' attention was not on vocabulary building per se but on communication. Thus, group interaction via WhatsApp seems to be the causal learning factor which is examined closely here to explore how it contributes to learning.

The essence of current WhatsApp interaction, as any genuine interaction, is the interlocutors' use of negotiation of meaning strategies that enable learners to form and test ideas, confirm understanding, ask questions and receive feedback, Learners reported that they were encouraged to make hypotheses about language and test them, after which they received feedback from the teacher and friends. Aligning with Foster (1998) who attributes learning in a physical classroom to learners' use of negotiation of meaning strategies as well as Castrillo et. al. (2014) who suggest that learning in a virtual environment takes place due to learners' use of these strategies,

I argue that this WhatsApp social environment enabled the participants to construct learning by using this set of negotiation of meaning strategies. WhatsApp data analysis showed that learners' skills in using these strategies developed over time as the intervention proceeded. Accordingly, learners showed growing confidence in using these strategies, while the teacher's interventions were gradually reduced in the later weeks of the intervention. This no doubt led to an increase in learner autonomy.

A further insight into how learning takes place in an online environment is given within the realm of the Community of Inquiry (COI) framework which provides insight into the complexity of online learning (Garrison 2007). The COI framework is consistent with the constructivist view of learning postulates that educational experience falls at the interplay of three dimensions: social presence, cognitive presence, and teaching presence (Garrison, 2007).

The COI framework helps to understand how the mechanism of online learning works in the current research by analysing each construct separately. Social presence is described as an ability to conduct effective purposeful communication and to maintain cohesion among group members (ibid). The nature of social presence in the current study is seen in learners' behaviours in online chat where they communicate openly. Data obtained from the interviewees reveal that learners develop a sense of community and social bonds when they are online and collaborating with others in the learning tasks. Learners also seemed to have the ability to adopt new identities in the virtual online medium which added to their confidence and comfort while participating. Sara, for example, indicated that the medium helped her to feel less intimidated about to participating than when in the classroom as there was no eye contact. Similarly, in his study, Sam (2016) talked about how group members felt competent and participated more as the study proceeds as

they constructed news identities and felt valued members of the group.

The second dimension of the COI framework is cognitive presence. Cognitive presence is defined in terms of "a cycle of practical inquiry where participants move deliberately from understanding the problem or issue through to exploration, integration and application" (Garrison, 2007, p. 65). In other words, cognitive prescience is a progressive development of inquiry which moves through exploration, construction, resolution and confirmation of understanding through collaboration in an online community of inquiry. In this study, cognitive presence was evident when tracking learners' engagement in knowledge exchange, connecting ideas, making hypotheses about language use and structures and negotiating for meaning. Yet, researchers indicate that inquiry hardly tends to moves beyond the exploration stage (Garrison, 2007). They explain that this could be attributed to the unrealistic nature of communication or the nature of the teaching presence (Garrison, 2007).

The third construct in the COI model is teaching presence which plays a significant role in supporting social and cognitive presence in any community of inquiry, greatly influencing levels of interaction. This is discussed in 6.3.10.1 below.

6.4.8.1 Teaching presence

The researcher's insight into the teacher's role allowed the development of a more comprehensive picture of how learning can take place. Successful learning in an online social environment can be seen to take place on two levels: the structural level or organisational (teaching presence) level, and the interactional or conversational level. Both of these could be said to be the responsibility of the teacher.

The mobile phone experience reported in this research was designed to have a strong teaching presence, in which the teacher created a structured learning environment by steering the conversation and providing opportunities to help students to expand on the conversation. In many instances, the teacher's decisions such as proceeding (carrying on an interaction), slowing down (the pace of the interaction), emphasising a point, or shifting the topic, were influenced by the behaviour and needs of the students.

At the level of interaction, Sharples, et al. (2006), Jeapson (2005), Castrillo (2004), Sam (2016), Keogh (2017) and many others view conversation as essential for learning, and they view learning as a construction of knowledge between the teacher and learners, and learners and learners, rather than knowledge received from the teacher. This conversation can also be seen in terms of Laurillard's framework (2002) in which she sees the concept of learning when using technology as a conversational process. This concept adds to our understanding of the teacher's responsibility and the learners' behaviours in a mobile learning environment.

Laurillard sees learning as "a dialogic process" between a teacher and learners. At the level of description, or at the start of a learning process, the teacher shapes the structure of the conversation. They decide the concepts to be discussed; the learners then ask questions to understand the teacher's output, and the teacher elaborates, or maybe another learner does, therefore the learners articulate their own understanding of the concept and may ask to check their understanding, and the teacher, or another learner, confirms understanding. This is very similar to many of the 'conversations' that took place in this research

At a higher conceptual or experiential level, Laurillard (2002) describes how learners form hypotheses and test their hypotheses - they may ask for feedback from a teacher or their peers to adapt their input according to the received feedback, and this can improve their actions in the future. Again, this is very similar to the conversations that took place in this research. For Laurillard (2002), this interaction is further enriched by students' reflecting on their experiences and leads to learning.

6.4.8.2 Learners' engagement

Many of the learners in this study had high levels of engagement. This engagement can be viewed as cognitive, behavioural, social or affective in nature. Behavioural engagement, according to Fredricks et al., (2004), refers to participants' practices in the WhatsApp group or Instagram posts in which there were a range of behaviours concerning dealing with WhatsApp messages. For example, many of the participants explained that they checked their WhatsApp messages excessively, opening messages instantly as soon they were sent, contributing to virtual classes or merely observing sequenced interactions, searching online when needed, consulting various resources, posting their contributions and asking for feedback. The learners' behavioural engagement also involved a shift in their behavior, as some students explained that their study habits changed due to mobile learning. For example, they used more vocabulary learning strategies and negotiation of meaning strategies while learning vocabulary; they learned anytime and anywhere, and they made use of commuting and waiting times to go on the WhatsApp learning group chat. The participants' behaviours in the current study are similar to the participants' behaviours in many other studies that have investigated the impact of mobile phone

learning on learners' achievement (e.g. Sharples, et al., 2006; Jeapson, 2005; Castrillo, 2004; Sam, 2016).

Cognitive engagement generally refers to the psychological investment in learning which involves exerting effort toward learning and using self-regulation strategies such as memorisation, planning, and monitoring (Mesaros et. al, 2009). In the current study, following Jepson (2005), the term cognitive engagement applies to cognitive processes in which conversers use the negotiation of meaning strategies to better understand each other and in turn increase input comprehensibility. Studies in second language acquisition (Foster, 1998; Foster and Ohta, 2005), as well as studies in mobile phone learning (Castrillo, et al.,2014; Jepson, 2005), assert that learners' use of negotiation of meaning strategies leads to language learning and helps a piece of learning to transfer to the long-term memory. Another facet of cognitive engagement could be traced when learners engaged with the learning material itself. Students stated that the repeated mini lessons sent by the teacher helped them to constantly review target words, which strengthened their memory. This type of cognitive involvement is supported by vocabulary learning research, which suggests that training in vocabulary learning strategies leads to better vocabulary learning achievement (Nation, 2001; Schmitt, 1997).

A further type of engagement that participants exhibited is affective engagement. The term affective engagement here is used to refer to two different constructs. First, it could mean participants' positive or negative attitudes towards the experiment, such as feelings of interest, enjoyment, convenience and comfort, or conversely, feelings like boredom, inconvenience or burden. The findings related to these types of feelings were shown while discussing the

participants' attitudes. The participants' attitudes towards mobile phone learning aligns with the literature concerned with users' acceptance of technology, as learners accept a particular type of technology if they find it easy and useful. Thus, many of the participants expressed their acceptance of current innovations as they perceived the benefits.

The other construct posited under affective engagement is the participants' ability to express their emotions via the WhatsApp group, although communication via this medium lacks the properties found in face-to-face communication, like body language and facial expressions. The data from the WhatsApp conversation analysis shows that the participants were using emoticons abundantly to express feelings such as happiness, anger, disappointment and embarrassment, and sometimes they tried to use contractions to convey meaning in the shortest way to cope with the pace of the conversation. The learners' use of emoticons to express feelings or to compensate for body language and facial expressions is also referred to in other studies (Keogh, 2017).

6.4.8.3 Learner autonomy in an online social environment

Learner autonomy can be defined as being responsible for one's own learning (e.g. Cotterall, 2000) or as the "learners' ability to take control over their own learning" (Reinders and White, 2016, p. 146). The learning environment set up as part of this intervention seems to have led to the development of greater autonomy amongst some learners by the end of the four week. This was an unexpected finding given the original teacher led design of the intervention and was not part of the research agenda. The extent that learners were able to take charge of their learning, control their learning goals and processes, and make decisions while learning, was evident. They made decisions about what and when to learn, and at what pace, chose when to participate or when to passively observe interaction, and decided when to be available online or not. These

behaviors enable learners to take more charge of their own learning and engage in a distinctive language learning experience. Learner responsibility and control is discussed in Laurillard (2007) who considers it as one of the distinctive merits of mobile learning.

Aspects of learner responsibility and control of learning were found in interviews when participants talked about how they approached their learning and in the content analysis of WhatsApp interactions. Many participants indicated that they felt that they gradually gained more responsibility for their learning as they no longer waited for the teacher to impart knowledge. Instead they searched online to select an appropriate piece of information to post on line, after which they discussed their findings and built on each other's' knowledge in order to learn.

Unlike in traditional learning practices, learners in this study were able to experience an elevated level of command over their learning which presumably allowed them to employ better metacognitive strategies concerning planning for their learning. They were able to allocate opportunities to study regardless of time and place, remain better connected with the learning community, and have more freedom to decide what to learn and at what pace. They explained that they can control their interaction in terms of cost since WhatsApp enabled them to exchange an unlimited number of messages with an unrestricted number of characters at no cost. Furthermore, some participants noted that WhatsApp instant message interactions enhanced their sense of control since it allowed them time to think about their responses to messages, and search online to find information before responding, unlike immediate conversation in the classroom. In addition, the WhatsApp autocorrect feature helped in maintaining control on their output.

These findings about levels of learner control in mobile phone learning link to other findings about technology and the affordances of mobile phones including Laurillard (2002), Madell, et al. (2007), Treem & Leonardi (2012), Sorgenfrei (2013), and Schrock (2015) who discuss the notion of control allowed in the use of instant messages via web-enabled phones.

6.5 Research question 3: In what way does a connectivist design-based approach serve to improve language framework teaching for a Saudi Higher education cultural context to refine, and adjust current learning principles and practices?

The fundamental basis of this project was to stimulate learner autonomy and responsibility for their own learning, with the guidance of the teacher on what constitutes a novel venture in their education. Application of design-based research in the current study was primarily aimed at testing the potential of current principles for mobile learning. Herrington et al. (2009, p.131) state these to be

- provide multiple representations of reality, which avoid oversimplification
- focus on knowledge construction, not reproduction
- present authentic tasks (contextualising rather than abstract instruction)
- provide real world, case based learning environments rather than pre-determined instructional sequences
- foster reflective practice
- enable context- and content-dependent knowledge construction
- support collaborative construction of knowledge through social negotiation, not competition

They broadly reflect Siemens thoughts on his connectivist theory of learning. They provide the basis for task reflection and planning for this DBR programme of research. The reflection upon and development of the DBS programme explored the theoretical implications and instructional guidelines for mobile language learning, based on Herrington (2009)'s and Siemens (2005)'s principles. The aim is to seek understanding of how Saudi students learning would be improved by mobile social media cooperation and develop a method of teaching which can be broadly instituted in higher education in global frameworks based on independence and integration. The discussion therefore develops to examine how the findings of this design-based research account for a new theoretical background for mobile language learning in Saudi Arabia.

6.5.1 Design-based research and design principles for mobile learning

In the formulation of theoretically driven pedagogies for mobile learning previous studies have tended to concentrate on technology based evaluations rather than student-centric perspectives and pedagogy directed coincidental paradigms. Such learning paradigms must take into account the mobility of students as well as interaction with the context and thus the design-based research programme is utilised to draw principles from the data produced by this lesson framed process. The current study is novel in its exploration of principles and practice of student-centredness, collaboration and contextual EFL instruction in a Saudi Arabian state education framework. It has been evident form the comments and feedback of the participants in the First Iteration that students were able to access knowledge and adjust learning practices to collaborate and explore new avenues and methods of self-education. The introduction of mobile based activities addressed many of the deficiencies of the current classroom practices perceived and outlined by

the students, thus improving not just their learning but expanding their ways and means of learning (Amiel and Reeves, 2008).

The adaptability of the programme enhanced the participants understanding of what they needed to know and find out to complete the tasks, acknowledging the need to alter their behaviour in the collaborative process. Learning was essentially an active process and the students directed questions in feedback sessions designed to elicit advice on how they could improve their investigations into knowledge accumulation and whether their enquiries were appropriately directed for task completion. After each activity and iteration they contributed to the data analysis by making valuable suggestions and recommendations that improved the learning design, assisting the researcher-teacher in identifying the applicability of each design principle in a way that met their needs and fit with the curriculum context. For example, when the principle "personalise: employ the learners' own mobile devices" was applied, some of the students indicated that the model types of their mobile phones were not sufficiently effective to collaborate via mobile SM application and contribute with high quality multimedia. They decided to upgrade their devices without prompting by the researcher. (see section 4.3). These findings conform to previous research about the impact of technology and the affordances of mobile phones on developing learners' autonomy which discuss the notion of control allowed in the use of instant messages via web-enabled phones (Laurillard, 2002; Madell, et al., 2007; Treem & Leonardi, 2012; Sorgenfrei, 2013; and Schrock, 2015).

6.5.2 Design-Based Research and Connectivism

After Herrington (2009)’s design principles for mobile learning were utilised in the First Iteration of the learning task they were adjusted to apply in the Second to take advantage of

social networking environments well-theorised by connectivism. The First Iteration utilising design-based research provided effective to promote active learning and the Second Iteration was extended attempt to explore how connectivist principles applied to enhancement of other learning practices through SM application, seeking more theoretical grounds for mobile language learning.

Design-based research had provided a meaningful framework to test the potential of connectivism to promote mobile learning in an EFL context. It reinforced student diversity whilst supporting differential learning, mobile social networking emphasising that the context of language was an effective source of continually-updated information. Knowledge did not merely reside in the teacher or the textbook but was "nurturing and maintaining connections … needed to facilitate continual learning" (Siemens, 2005, para. 26). Feedback was indicative of a developing ability to distinguish between relevant and irrelevant information or networks.

6.5.3 Design-Based Research and Mobile WhatsApp Application

Guided by design-based research, the iterative cycles of theory testing, retesting, and refining have helped educators using mobile learning to examine the potential of novel mobile digital devices. Cycles of implementation and evaluation conducted with the students in this study using mobile SM application helped to characterise the potential of relatively novel learning tools, and the extent to which they can enhance contextual language learning. Herein the design-based research offered both researcher and students helpful criteria to evaluate the potential of the mobile internet, and mobile social networking. Students, for instance, discussed the difficulties they encountered while accessing mobile SM application, proposed solutions, and tested these solutions in practice (see Section 5.5.3). Different styles and behaviours of using mobile

technologies and social media were highlighted in feedback but the clear emphasis was that with non-problematic access full use and personal exploration enhanced the accumulation of knowledge from diverse sources. When the learner could not understand something in particular, it was relatively simple to find another explanatory source. The variation between personal social media use versus learning utility underlines the need to study different styles of uses in different situations.

Students' reflections on and responses to each learning practice as highlighted by Herrington et al (2009) were observed, noted, and then analysed. Students' reflections were elicited in the stimulated recall sessions, while their responses to the intervention and the design adjustment were observed during both classroom and SM application interactions. Analysis and discussion eventually led to the formulation of theoretical guidelines as outcomes of the current study. Inspired by design-based research, Section 6.5 provides a synthesis of previous practices, findings, and analysis in the form of design principles for mobile language learning.

6.6 Research question 4: What challenges and learning principles for mobile learning were encountered in the implementation of mobile social media application learning in Saudi higher education?

These are based on student reflections on the two Iterations of the learning design, theoretically examined against the generic design principles for mobile learning of Herrington et al. (2009) as well as the guidelines of connectivism. The following design principles are thus developed to guide the utilisation of mobile technology in an EFL learning setting:

Technological principles:

1. Effective mobile devices and mobile internet access may be provided to students.

2. Using technological tools, with which students are already familiar, is crucial.
3. Universal flexible interface design, fitting current and future devices, should be considered.
4. Asynchronous and synchronous communication channels should be maintained.

Pedagogical principles:

5. Linguistic characteristics of information have to be highlighted, given that most curricula emphasise lingua-technical knowledge as a basis for award qualification
6. The design of a mobile task should focus on different language skills, including reading, writing, oral and pronunciation, speaking and interactive communication
7. Effective assessment tools, both collaborative and individual, need to be utilised.
8. Students should expect to take full advantage of the potential of their mobile devices in promoting their language learning, making use of all faculties provided for audio-visual learning. Teachers should enhance students' expectation.
9. Mobile tasks must incorporate contextual activities to promote student collaboration, from the perspective of what interests them and from the native speaking environment
10. Mobile tasks need to reflect the students' diversity, autonomy, and emergent knowledge.
11. Mobile tasks should maintain the privacy of students and their learning activities.
12. Students should explore their own contributions to the task design and adjustment in practice.

Contextual principles:

13. The context is a major source of information.
14. Mobile tasks should provide opportunities to practice the language outside the classroom.

15. The contextual knowledge of a task should be maintained. Students need to distinguish between linguistic and contextual knowledge.

16. Across contexts, cultures, and communities, learning tasks can be implemented.

Each of these principles is discussed in more detail in the sections which follows:

6.6.1 Technological principles

1. Effective mobile devices and mobile internet access must be provided to students:

Herrington et al. (2009) suggested that mobile learning tasks should be implemented using the students' own mobile devices. Their familiarity with the device would not require extra time for demonstration or training. However, young students, including those in the present study, are often aware of different functions of mobile devices even if they do not own them. Indeed mobile devices and technologies with more potential for language learning maybe provided by institutions or sponsors if students cannot afford them (see Section 5.2) but teachers have to ensure their learners understand and can manipulate the facilities and use them in effective learning activities.

2. Using technological tools, with which students are already familiar, is crucial

The present study did not utilise or design specific software or a mobile website created for the study save for creating a group with private access on pre-available mobile platform. It implemented an interactive social networking tool, with which students expressed familiarity, that is the SM application. Section 4.3.3 has indicated how students' prior familiarity with mobile phone technologies and SM application played a crucial role in making this learning task more effective. It was simply a matter of re-directing attention from the social to the educational in already practices.

3. Universal flexible interface design should be considered:

Interactivity, user-friendliness, and mobile accessibility of social media do not necessarily mean it is educationally effective and safe from a student protection perspective. Although the latter is an issue for students and their parents in their own time, responsibility does lie in teacher directed tasks where use of social media is a requirement of performance. No student in either group complained of any such problem arising.

It was noted with three of the male group and two females that some technological problems regarding uploading to/downloading from SM application were encountered so where an application or a website is created for a learning task, instructional designers need to be mindful of the rapid evolution of mobile technology. The design and download speed of digital resources should meet student expectations of ease of access, especially on less powerful mobile devices, and enhance experience with sophisticated contemporary technologies (see Chapter 4, Section 4.3.3). Software needs to facilitate contribution and addition to lesson and activity design. This is already available via free to access social media platforms, adapting particulars of the design to the needs of the learning group.

4. Asynchronous and synchronous communication channels should be maintained:

Hrastinski (2008) distinguishes asynchronous from synchronous learning in that asynchronous is a time-free learning process that does not involve immediate response such as emails and discussion boards. In contrast, instant real-time online communication, such as chatting and video conferencing, is a characteristic of synchronous learning. Public and private student-teacher and student-student communication channels need to be diverse in nature in a mobile learning task (see Tables 4.4 and 5.5) and so should include both types of communication

channels. These are already supported by SM applications such as Instagram and WhatsApp, and indeed most social media tools. Students were therefore able to collaborate on topics and exchange messages at their convenience without the need to access proprietary software apps, simply using the group set up in Instagram.

6.6.2 Pedagogical principles

1. Linguistic characteristics of information should be highlighted:

In a mobile language learning task, students should be able to perceive the linguistic value of information they share, its relevance to the activity undertaken and how it would assist in their curriculum responsibilities to achieve requisite standards of qualification. This was an enquiry raised in both gender groups in this study and the links to the curriculum were stressed at each feedback stage. Kukulska-Hulme and Arcos (2011) put high emphasis on teachers' guidance which benefit the students to make the most of everyday and situated opportunities for their language learning and where raised in meetings was linked to their university learning requirements. They were able to connect in-class topics with relevant contexts outside of the classroom, create relationships between what they learned in the classroom and what they uploaded Instagram, thus promoting discussion and language use which could subsequently be linked by the teacher to the curriculum.

2. The design of a mobile task should focus on different language skills:

Mobile learning has been found helpful to foster different language skills including writing (Comas-Quinn et al., 2009), reading (Chang et al., 2010), speaking (Hsu et al., 2008), listening (Nah, 2008), and vocabulary learning (Lu, 2008). Since it is difficult for teachers to focus on all skills at once in traditional presentation techniques but evidently possible to develop a mobile

language learning task to comprehensively target at least some. Social media platforms can accommodate several such tasks at the same time, which would provide future research with an insight into what particular aspects of English learning attract students in comparison to others.

3. Effective assessment tools, both collaborative and individual, need to be utilised:

No quantitative measures of academic achievement were conducted in this study. The intention was to identify student perceptions and the nature of interactive learning rather than seek a cause-effect conclusion on the value of technology. The promotion of different language skills and the data based on student feedback on their learning in a mobile language learning task aids consideration of assessment strategies but the assessment of the value of the digital tools in effecting improvement was not an aim of this study. This is arguably a role for quantitative testing, previously conducted by Chang et al. (2010) and Hwang et al. (2011), including self- and peer-assessment automatic scoring system by which students' keep track of achievement.

4. Students should expect to take full advantage of the potential of their mobile devices in promoting their language learning. Teachers should enhance students' expectations:

In this research some students of each gender produced, uploaded and shared their own learning materials whilst contributing to the specific activity and lesson design (see Chapter 5, Section 5.2 for more detail). Employing a student-centred learning approach will evidently allow students to explore new methods to enhance their language learning, determining which sources and mobile applications have the potential to assist them with their language learning, including simple dictionaries and vocabulary applications. Students', in reviewing, sharing and collaboratively accessing information sources and tools of assistance, commented that the discarded information that did not '*seem right'*, according to one female group participant. In the male group, two

participants added they had ‘moved on’ from a source because, according to one, ‘*it smelled bad*.’ This was not explained, although his grammatical use of English was corrected which caused some amusement amongst his peers. Clearly the project was aiding development of critical and analytical skills and learning competence.

5. Mobile tasks should incorporate activities that promote students' collaboration:

Local cultural norms reflecting the diverse backgrounds of the students in both gender groups had some identifiable effect on their willingness to cooperate, those from agricultural regions being more enthusiastic about sharing than the students from Riyadh. Nevertheless, such reticence was short lived with a developing understanding that cooperation gains more than individual efforts. This was aided by the utilisation of multimedia materials such as pictures and video clips which promoted engagement with the learning task. These were more attractive than text-based learning materials, few students indicated boredom. Thus, the integral involvement of students in the development of tasks enabled them to "choose what, when and where to learn that is not always apparent in the more formal contexts" (Kukulska-Hulme and Shield, 2008, p. 281).

6. Mobile tasks need to reflect the students' diversity, autonomy, and emergent knowledge:

Connectivist theory of learning states that "learning and knowledge rests in diversity of opinions" (Siemens, 2005, para. 26). This is hardly a contentious statement given that social constructivist thought describes such learners as those who embark on an enquiry into the accumulation of information and passing judgement on value and management. Students' diversity, individuality and difference represented in their different backgrounds or origins have to be recognised by any mobile learning practice, crystallised in the variety of contexts to which the students belong or originate. Such diversity is invaluable in active learning, be it classroom

based or using mobile digital technology, to create a repertoire of learning ideas that can promote collaboration and encourage students to participate. Knowledge comes as a final outcome.

7. Mobile tasks should maintain the privacy of students and their learning activities:

Some students in the present study were concerned about privacy issues, hence the time spent explaining storage of data and de-identification of information and feedback sources (see Sections 5.4.2, 5.5.4, and 6.2.2). Ley (2007, p. 76) comments that "the more invisible the technology, the harder it becomes to know what is controlling what, what is connected to what, where information is flowing, how it is being used, what is broken" and so some students preferred to adopt new identities or avatars on social media interactions. It is a lesson to proprietary software instructional designers to facilitate privacy in collaboration on social networking websites.

8. Students should explore their own contributions to the task design and adjustment in practice:

One of the significant functionalities of design-based research as discussed in Section 5.2 is the incorporation of participants' voices in shaping the learning and design as well as the adjustment of the lesson and teaching design (Wang and Hannafin, 2005). The author argues this can eventually lead to changes in the curriculum as more emphasis is placed on communication and interaction, or at least shared with grammar specifics. A mobile learning task is automatically planned and formulated to utilise the students' own mobile devices and impact on their personal space in the social media as a reminder of the continuing nature of learning. Such contributions to learning will only generally flow with enthusiasm where it integrates reflection and experiences of students using those devices as a social tool. Student-teacher and student-student

cooperation is translated into practical learning activities which promotes the development of language competency. The sense of control enhances confidence which aids competency and improved exam performance.

6.6.3 Contextual principles

1. The context is a major source of information:

According to Woodill (2011, p.67), mobile learning is ideally facilitated in situations where the context matters to students. Learning becomes interesting when the learner is interested and motivated which is generally promoted amongst young adults when they are doing what they perceive to be of benefit. The study evidences this fact in student responses, after years of 'enduring' traditional presentations devoid of contextual significance. This design-based research has explored the relationship between contextual factors and knowledge formation and how it subsequently contributes to the transformation of information into knowledge. Student collaboration, as shown in Capture 4.2, is indicative of how the context is a major source of knowledge, guided by a teacher in the early stages to concentrate and direct such learning to their institutional demands. Mobile learning is not focussed simply on the issue of mobility but on how students interact with the surrounding environment and connect that to their actual learning.

2. Mobile tasks should provide opportunities to practice the language outside the classroom:

As previously highlighted, the lack of opportunity to practice the language outside the classroom is a major constraint affecting most EFL contexts. Therefore, the present study was an attempt to create more contextualised and authentic opportunities that extended beyond the classroom and exploited the affordances of mobile social media. Everyday contexts offer valuable opportunities

for language learning to be contextualised in real life situations. If what the context can offer is not part of the learning activity, unique opportunities may be neglected, and then the mobile learning task will not make sense to students (Kukulska-Hulme et al., 2007). Hence, it was evident in this study how the external context provided the students with stimulative language learning occasions that not only promoted their language use, but also integrated the various contexts with formal classroom activities.

3. The contextual knowledge of a task should be maintained: Students need to distinguish between linguistic and contextual knowledge:

Students may not appreciate the importance of the learning context unless they integrate it in the form of knowledge accumulation and match it to the grammar and linguistic demands of the curriculum. In other words, students should have the opportunity to explore the value of the context and to what extent it can enrich their learning and their institutional based outcomes (see Captures 4.2, 4.4, 5.4, and 5.6). It is a pragmatic operation of working the potential knowledge gains into a linguistic framework pertinent to formal learning.

4. Across contexts, cultures, and communities, learning tasks can be implemented:

Learning activities based on student preference and understanding of their own cultural framework is undoubted valuable, as was evident from comments made by participation students, on issues, for example of domestic industry, regional diversity and popular music. Nevertheless from the perspective of communicative competency, learning tasks should examine contexts, cultures and communities in native speakers of the target language. Global learning is described as the potential for mobile learning to reach students from all over the world to help them become better educated (Ally et al., 2011).

Connectedness and mobility via mobile technology brings access to rich sources of knowledge about local and global contexts with more advanced and confident EFL students across the world are willing to exchange information and sources which enhance their own learning. This was explained to the participants at the post-study de-briefing, with a warning about adopting culturally inappropriate relationships.

Learning across contexts might be a challenge for educators in terms of assessment and evaluation. The challenge, Vavoula and Sharples (2008, p.1) argue, emerges while trying to determine "how people create new contexts for learning through their interactions and how they progress learning across contexts". Such complexity of mobile learning assessment is one of the areas that mobile learning research needs to address in the future.

6.6.4 Challenges of MALL Integration

At a pedagogical level, the findings from the current study highlight a number of impediments in adopting mobile learning. These barriers are synthesised across the two study phases, and include academic load, language barrier, and lack of digital literacy in the target language.

Some participants, mostly from the First Iteration of the study, explained that though they were interested in mobile phone technology, they did not favour incorporating it officially into their daily learning routine, as they were already overloaded academically. That is, every day after returning from university, they were usually busy with academic assignments and memorisation for exams; therefore, they could not add to their workload. Others put it differently, as they explained that at home, they needed to feel disconnected from academic life. Thus, a line needed to be drawn in order to allow them to detach themselves from university life, yet mobile learning blurs these lines between study and personal life. Shundog and Higgins (2006) claim that mobile

learning is still a kind of learning that needs effort and brainwork, and many people, students or employees want to relax or listen to music after a long day of work or study.

Many participants, particularly from the First Iteration, reported that their low English proficiency was a hindrance while adopting mobile phone learning. That is, they are skillful at exchanging messages using WhatsApp and other mobile phone applications, whilst simultaneously playing computer games, listening to music and watching television, yet these multi-tasks were accomplished in Arabic, which they feel comfortable with, rather than in English. Besides, a few participants from both iterations referred to their poor typing skills (in English) as an impediment which demotivated them regarding adopting MALL. Some of them faced problems with spelling which required time to search for the correct spelling. This, as they explained, could not always be facilitated by the autocorrect feature on WhatsApp, as it sometimes failed to make correct guesses. This type of difficulty hindered the flow of conversation or led to a loss of interest in continuing with the discourse. Another obstacle emerged from the fact that some learners had insufficient digital skills. It was possible to lose data accidently from their technological devices if they were not careful and they did not know how to retrieve it from iCloud. This deterred them from trusting mobile phone technology as a learning tool and, consequently, they prefer printed materials. Although the research sample, following Prensky (2001), can be considered digital natives since they are born after 1980, which probably means that they spend their lives immersed in technology and are digitally skillful and literate in their mother tongue, they face digital literacy challenges when reading for knowledge, comprehension, critical thinking, and writing words in English. As such, there is clear evidence of a lack of knowledge of the essential principles of electronic devices. Research into the pros

and cons of using mobile phones in learning has identified further types of challenges caused by MALL. More specifically, a study conducted by Yeboah and Ewur (2014) to identify the influence of WhatsApp Messenger on students' achievement in Ghana, showed that WhatsApp implementation is not without its drawbacks. Interviews with 50 students revealed that WhatsApp consumed students' study time, negatively impacted on spelling and grammar and sentence construction, reduced concentration during lectures and distracted students from doing assignments (Yeboah and Ewur 2014).

6.7 Conclusion

This study has illustrated that students experienced contextual language learning that was highly student-centred and student-generated and the Findings Chapter indicates they embraced the opportunity to learn in a manner which adopted what they considered to be relevant to their world-view. The design-based research approach encouraged co-contribution to the development of their learning experience and the positivity reflected supported the continuing application of the principles of the design to a new normal of lesson practice.

The need for a theoretical and contextual paradigm that accounts for mobile instruction is reflected in the functionality of a design-based research project to identify principles for mobile language learning. This has been examined herein, using student feedback to guide the thematic elements which aid comparison to the prior research of Herrington et al (2009) transplanted into a developing Saudi framework. This final discussion raised some important questions. To what extent are EFL students, Saudis in particular, ready to continue adapting such student-centred learning approaches? In addition, are EFL teachers and policy makers encouraged to implement such approaches? Specifically, are EFL teachers well-prepared to utilise innovations in mobile

phone technologies and social media to improve their students' language learning? Are teachers self-motivated with this utilisation, or should it be a top-to-bottom decision, that is, made by higher authorities or policy makers? Will the out-of-class local context be an instant source of interesting information, or will such information will be invalid for future generations? Such questions might open the gate to unexplored areas of research and encourage other educators, researchers and instructional designers of mobile language learning to investigate these issues. The concluding chapter, Chapter 7, discusses some of these issues. Contribution and limitations of the study, and how this research is indicative of Saudi EFL learners to embrace the new principle of student-centred learning and what steps will have to be taken by teachers and policy makers to retrain and implement new practices.

7 Conclusion Chapter

7.1 Introduction

This study has been predicated on the DBR approach, with the overall aim of investigating and critically assessing the role and value of mobile social media applications in supporting the development of academic language and collaborative learning in Saudi higher education. The project was initially based on the following observations:

i. Mobile social media applications have opened up a world of information, social activity and commerce to all, regardless of gender and age, through the rapid evolution of communication technology, and

ii. The issues which arise from this study had not previously been fully explored in the particular context of the heavily teacher-directed, traditional, teacher-presentation based education framework of Saudi Arabia - a society in which the faith of Islam permeates every area of behaviour.

The context of the study is the higher education framework of the Kingdom of Saudi Arabia, and the programmes and initiatives developed by the government for the advancement of education to enhance the commercial competitiveness of Saudi business in the global market. The central role of communications technology and the improvement of the learning of English as the international language of business are key points in the government's 'Vision 2030' initiative.

The objective of the theoretical framework was to provide a basis for widen the scope of current teaching and learning practices, moving beyond the basic teaching of grammar and simply providing students with instructions on how to pass language tests, to developing a more

communicative competency-founded level of interaction in the target language. This guided the reflective framework of the study, and the findings indicate that this offers benefits by increasing learner collaboration and motivation. The results of the study show that the highlighted principles of connectivism and mobile design helped the learners to see the results of their learning in real life, through the use of authentic language in the learning process. An important outcome is therefore to provide a basis for the reformulation of the current dominant paradigm of language teaching in the context of the study – i.e. to redefine the learning objectives of EFL and transform the principles underlying teaching practice in Saudi Arabia accordingly.

This therefore points the way to a relatively novel pedagogical approach in the Saudi EFL context, as it develops the traditional, teacher-directed process into one which is more collaborative and student-centred, utilising a broader range of learning sources and technologies. This study contributes towards an understanding of how mobile learning technologies, in particular the use of social networking sites such as Instagram and WhatsApp, offer new pathways to allow students to learn in ways assisted but not led by teacher intervention; insofar as the established curriculum remains static. While the teacher supported the learning, the students' use of mobile WhatsApp and Instagram revealed their willingness and competence to direct the themes and means of their language learning themselves. In response to this, stakeholders and policy-makers need to reconsider formal learning aims and objectives to accommodate a more interactive communicative approach.

The study has investigated the potential of mobile phone technologies and social networking to enhance learning by drawing on students' own desire for language learning and instilling an awareness of the need for language proficiency in a modern business and commercial environment.

This is essentially a democratisation of learning through the DBR process, which should be incorporated into teaching and learning practices. Using familiar qualitative research methods, this study has opened a new path towards understanding technologies that are now ubiquitous in our students' world. It has critically evaluated the impact of mobile social networking, such as mobile WhatsApp, on educational contexts for creating context-dependant and context-aware EFL instruction, based on students' perceptions and observing them, and has found social media to be attractive as part of the learning process.

Whereas the focus on different linguistic skills is apparent in several mobile language learning studies, the contextual dimension of mobile language learning is a relatively new pedagogical area for investigation, particularly in the Saudi EFL context. A motivation of this study was the need to transform this EFL learning setting from traditional and teacher-directed to one that was more collaborative and student-centred. This study contributes to an understanding of how mobile learning technologies, in particular the use of social networking sites, offer new pathways to allow students to 'lead' their own learning in ways which are unadulterated by teacher intervention. While the teacher supported the learning, the students' use of mobile WhatsApp in this study revealed their willingness and competence to direct the themes and means of their language learning themselves.

The study therefore investigated the potential of mobile phone technologies and social networking to facilitate this transformation on the one hand, and to create a more contextualised and authentic EFL learning experience on the other. Creating guidelines for both mobile instructional designers and EFL instructors, inspired by a design-based research approach, was a core theme of this study that was consequential, two cycles, to the research findings. In this

emerging field, the present study provides one of the first in-depth analyses of the role which WhatsApp and Instagram can play as social networking sites in a true democratisation of learning. Using familiar qualitative research methods, this study has beaten a new path towards understanding technologies that are now ubiquitous in our students' worlds. It has critically examined the impact of mobile social networking technologies such as mobile WhatsApp on educational contexts for creating a context-dependant and co-created collaborative curriculum, drawing on students' perceptions and WhatsApp observations.

Technology influences all theoretical viewpoints by providing techniques and unique instructional methods. Every new idea or theory presented merits close examination for the possibility of helping students learn more successfully. With such a diverse population, an equally diverse selection of instructional techniques is necessary. Connectivism offers that diversity through a variety of networks, helping the new generations collaborate to find solutions to an ever increasing number of questions. Throughout the years, educators and technologist had to learn to incorporate these changes in order to maximize learning. Engaged learning relies on collaboration among the members of the learning community (Conrad & Donaldson, 2004). These connectivist socialisations help the learner structure (cognitivism) and create meaning from what is observed (constructivism), thereby establishing recognisable patterns to use in future situations (connectivism). Although Siemens (2005) argues for the shortcomings of existing learning theories, the continued rapid advancement of new technologies and associated ideas will continually transform instructional methods and expectations for acquiring knowledge. A paradigm shift, indeed, may be occurring in educational theory, and a new epistemology may be emerging, but it does not seem that connectivism's contributions to the new paradigm warrant

it being treated as a separate learning theory in and of its own right. Connectivism, however, continues to play an important role in the development and emergence of new pedagogies, where control is shifting from the tutor to an increasingly more autonomous learner.

This chapter outlines the main findings of the study and highlights their implications for teachers, researchers, policy-makers and material and curriculum designers. The limitations of the study, its contribution to knowledge, and recommendations for future research are also presented in this chapter.

7.2 Barriers to Mobile Learning - Traditional Teaching and Learning Methods

Reflection on how far the objectives of a study are achievable requires not only a consideration of its purpose and methodology, but also of the context in which the research will be conducted and the potential obstacles it will face - particular the cultural values attached to a national education framework. The value of learning strategies in the use of mobile technology for independent learning lies in the encouragement and facilitation of its use by students. It is impacted upon by the nature of students' learning environment as they progress towards university level; by how they have been taught previously, and how their experience can be enhanced by new software. The achievement of the four objectives is therefore dependent on the perspectives of learners and their teachers, and how the approach taken reflects and enhances the socio-educational structure of higher education in Saudi Arabia.

It has been noted throughout this study that in the Saudi context there is overt resistance to the independent, autonomous use of mobile software to develop vocabulary learning, which is

manifested in institutional methodologies of teacher-led presentation of knowledge, and the more covert, yet no less significant demands of traditional and cultural attitudes to change are stifling progress. This arguably arises from the student experience of learning throughout their years in the Saudi education framework, which is permeated by the traditions of Islamic teachings practiced in the rote learning of religious texts in mosques and then transferred to school.

This should not be viewed as indicating that technology is undervalued; indeed, it is promoted vigorously by government initiatives in public higher education institutions as integral to the economic and social future of the Kingdom's prosperity. Although the national, cultural and faith context of education cannot be avoided, and its substantial effect on expectations and methods of teaching and learning, the essential nature of learning English vocabulary, and the ability to use it effectively in communication situations, is powerfully emphasised and supported by government initiatives. However, time in the classroom is limited, rote learning is limited in its lexical context, and teacher control over what is learned is an imperative in the Saudi context.

7.3 Cultural Imperatives in Saudi Education

Regulations and expectations necessarily impose constraints, and while cultural directives permeate all education frameworks, including those of liberal democracies, it is a question of degree, and the edicts of Islam are inherent in all aspects of Saudi life. It has not, therefore, been necessary for the purposes of this study to distinguish between overt and covert obstacles to the introduction of mobile software technology, such as WhatsApp, as a welcome support to learning, because students essentially interact in terms of formal rules and personal attitudes. This context is pertinent to examining the contribution that social media applications can

potentially make to the development of autonomous learning, and the introduction of mobile social media applications as a learning tool which encourages students to take responsibility for their own learning.

The question of whether resistance to the use of technology for autonomous learning is societal, cultural, personal or inherent in institutional regulations has little bearing as far as the distinction between them is concerned. The fact that there is such reticence in the promotion of independent learning and that students are not accustomed to educational change must be borne in mind when reflecting upon the objectives and themes of the study and its recommendations.

7.4 Saudi Initiatives for the Development of Learning

Over the last two decades, the Saudi government has launched numerous initiatives to promote and manage the introduction of ICT into classrooms, particularly through the most recent Vision 2030 programme. Schools and universities have seen the building of an adaptive ICT infrastructure to aid learning and move away from traditional presentation and textbook-based learning.

The use of technology has been studied quite extensively globally, but in the Middle East, and especially in Saudi Arabia, little consideration has been given to the use of mobile phones and vocabulary education apps or to their value in supporting learning. As has been noted in each of the previous chapters, this method of learning is controversial, due to concerns about a loss of control and authority over what is learned and the greater autonomy for students. Nevertheless, what has become apparent from the target group of L2 learners at Al-Imam University is that apps are already being used by learners as an aid to study, helping to meet needs which are not

fully satisfied by traditional, time-limited classroom teaching.

7.5 Pedagogical Implications

The introduction of supportive autonomous learning social media apps, in the context of the preparation for and execution of this study design, has considerable implications for the role of teachers in developing their own practices to promote learning. Essentially, the use of the app needs to be taught if students are to gain advantages from its full range of functions. It has been confirmed that autonomy is not necessarily inherent in a person, but can be learned with the guidance of a teacher. The most direct implications of the research in this area are the need: (i) to raise awareness amongst students concerning the use of the functions of the software, and (ii) to encourage learning as a continuing activity outside classroom, institutional and curriculum requirements and constraints.

The students showed some enthusiasm for mobile social media, and indeed in the broader context of the pilot study, and a significant awareness of the educational value of social media interaction was found. This should be harnessed by learners and their teachers. Some students may find their own way, while others reqiure guidance to maximise strategies in order to make the best use of the opportunities available to them.

7.5.1 Implications for EFL teachers

Teachers were not included as a focus group in this research, as the emphasis is on students. What has been learned about changing needs in pedagogical practice comes from learners' criticism and feedback, as they become more involved in pursuing their own economic success in post-university employment in the new Saudi commercial market. Teachers are particularly

encouraged to know their classes and the individual personalities of their students, and to modify their teaching styles to allow each learner to be an active participant in the classroom. The presumption which arises from this study is that students must not be treated as mere recipients of the information that teachers deliver to them, as this reduces motivation and achievement.

Using mobile social media applications and internet resources is not suggested as a complete answer to the problems of the sub-standard EFL outcomes in Saudi Arabia, but it is shown that these are valuable tools for stimulating interest and involvement, and are easy to access and use. Lecturers and tutors do not need to investigate proprietary, expensive stand-alone mobile applications to enhance language teaching. There are free, widely used and adaptable platforms on the internet to be taken advantage of with a little imagination and student contribution. However, teacher training is required to meet student needs.

7.5.2 Teacher training and student interaction

It was noted that some students tended to use only the most basic functions of *WhatsApp* or *Instagram* rather than venturing into the more interactive community of learning to which the software offers access. This, it is suggested, either reveals cultural inhibitions on the part of learners concerning the expansive community interaction facilities, or simply reflects their lack of confidence in navigating the software. Whilst these potential conclusions were not examined specifically in the interviews with the learners (a weakness in the research which was not anticipated in pre-study reflections), they are drawn from the author's knowledge of the personalities of the classes involved, which he taught whilst in the Kingdom. The implication for teachers is that they need to guide their learners towards independent ways of learning to enable

them to develop strategies which will be of value for progression in the workplace.

It is in this context that teacher input is vital to make the best use of what is recognised by their charges as a valuable learning device. Some students, arguably, cannot learn on their own - they have to be taught. The findings and discussion are supported by the assessment of Masouleh and Jooneghani (2012), who argue that "*considering autonomous learning as an unbridled learning is as ludicrous as to assume that an infant can grow up with the help of his/her mother*" (p. 835).

7.5.3 Teacher support for learning skills development

The evidence of the limited, untutored use of the software capabilities indicates that teachers should be integrally involved in supporting their students' autonomous learning in relation to all those features, such as engaging in interaction of visual and audio posts, which are considered pertinent and beneficial to their progress. The relatively limited use of the app functions, as noted in the findings, and specifically of those which develop behaviourist-related skills, suggests that teachers should challenge their students rather than simply offering advice to expand their strategies for enhancing learning. This would assist in the development of a student-focused, independent learning strategy, which is one of the principal themes of this study. Nevertheless, professionals must be convinced of the value of any change of practice, as just because a method is 'new' and seems like a 'good idea' will not affect the perceptions of seasoned teachers who have been moulding young minds sometimes for decades.

The findings show that while smartphone educational software is a relatively novel way of supporting and advancing learning, this in itself does not mean it has still to reach the attention of students - there is simply a need for greater awareness of how exactly to use it. It is reasonable to

draw the conclusion from the students' use of the mobile app that it is a natural extension of the learning environment. This has clear implications for teaching and learning practices.

The onus is now on the management of higher education institutions and individuals in positions of authority to adapt the methodology and practices currently in place to fulfil the demands of the government for improving the use of the English language as an economic imperative. The results and discussion indicate that educators must learn how to use and incorporate the technological advantages of mobile software into learning.

Cultural concerns over the control of learning process can, certainly in the early stages, affect how the utilities of mobile social media applications are embraced. It was stated by two students that the basic functions were inadequate to satisfy their learning needs, and therefore they stopped using the app after a short period of time. Therefore, the functions of the app need to be more effectively utilised to enhance its pedagogical value, perhaps through the setting of curriculum-based challenges, contextual use exercises and word games. Stimulation of the learner's imagination will logically increase the desire to use social media applications, increase incidental learning and promote contextual use.

7.5.4 Implications for curriculum Designers and policy makers

The findings of the study show that the curriculum of the traditional English classroom negatively affects students' attitudes toward learning EFL and needs revision to meet the primary purpose of language learning, i.e. in particular communication skills. Academic competence will remain the foundation of EFL, but unless learners are able to use the language confidently, this will prove of little practical value to the Vision 2030 initiative to broaden the attractiveness of

domestic economic markets as a provider of employment for a burgeoning young Saudi population. The curriculum revision must include alternative assessment methods beyond grammar forms and the limited skills covered by textbooks. The present approach is not a true measurement of students' language proficiency; rather, it measures the students' ability to memorise the grammar forms and instructions covered by the textbook.

Policy makers must also revise their goals and objectives to accommodate the principles of constructivist language learning, and implement these principles along with providing computer aids and other resources in different curricula within all levels of education. Social media have proven to be a rich source of ideas and learning, interaction and cooperation. Perhaps the following student's comment best summarises the implications of the present study for policy makers:

I wish that the decision makers would respond to our requests and change the curriculum and the teaching method in the high schools and in the universities as well, particularly first year. So that we could achieve our language learning goals. The current teaching method, however, is merely a waste of money and effort and the outcome is not satisfactory, and most importantly boring with just spoon feeding (Male Student:N.12).

7.5.5 Implications for software designers and programmers

The study has shown that the adoption of an effective learning theory with a reflectively designed teaching approach, together with the use of technological mobile applications, will be effective in enhancing learning motivation - a primary step on the path to improved outcomes. Proprietary software must be based on sound theoretical and pedagogical principles, rather than

full of drills and practice mobile applications that have exactly the same objectives as didactic teaching methods. The adoption of practices based on social media can enhance value in line particularly with philosophies of learning such as connectivism, as discussed in Chapters 5 and 6.

Context is a major motivator of EFL learning. There are cultural inhibitions in Saudi society and politics. These regulate the level of autonomy in learning and the conformity demanded in educational practices. There may be changes over time, but experience is that these will be slow, despite the vision of reform highlighted in the new initiatives. Importantly, mobile programmers and language tutors must consider culturally-friendly programmes that conform to societal and religious restrictions, and take the required steps toward the proper implementation of such programmes. This has been achieved in a relatively simple way through reflection and monitoring in this DBR project. Funding educational change in Saudi Arabia is not currently a political or economic issue, and facilitating interactive software, according to those who participated in this study, will stimulate interest and improve communicative competence.

7.6 Recommendations

A structured study, such as this PhD empirical work, using the existing learning theories is required in order to acquire the core knowledge for a specific field. While the theory presented by George Siemens and Stephen Downes is important and valid, it is a tool to be used in the learning process for instruction or curriculum rather than a standalone learning theory. It has also forced educators to look at what is being done in digital education and rethink, debate, and philosophise over how each part fits. Continually evaluating how each new generation learns with regard to instruction and curriculum serves to hold education to high standards. This

research has examined the opportunities and perpectivies in which a tutor and student roles can be considered to change when using a connectivist learning social media applications model as outlined in Figures 3.1 and 3.4. The design based research cycles model presented provides the cycles of opportunity to consider the use of social media within a connectivist learning environment and as a result has provided an opportunity to consider the use of social media application within teaching and learning from a new perspective. This study has found that the roles of staff and students clearly change as a result of the use of social media in a Saudi university environment, and these would largely appear to meet the expectations of a connectivist learning model but not entirely.

This study has called attention to an important empirical research area for the Saudi Arabian education system, which is seeking to provide a high quality, effective learning framework: the behaviour of young technology users while using mobile phones and social media. The first main point that arises from this study is that some students had already discovered the value of mobile social media apps and were using them prior to this study, although not to their full potential. Secondly, government initiatives demand the use of technology in education, potentially to the extent of replacing 'paper' learning by 2020. The following suggestions, based on the results of this research, are tentative but realistic:

- Before implementing the use of technology, the profiles of the learners need to be considered. Their readiness to use the technology, their technical skills, their interest in using technology and in language learning all need to be taken into account. This will enable teachers to make appropriate decisions regarding the suitability of MALL for their learners so that they can expect a level of success from the integration of mobile phones .

- Both learners and teachers need to develop an awareness of the advantages mobile learning could offer the learning process. They need to identify those features of mobile learning that make it similar to but at the same time distinct from the physical classroom setting.

- Teachers should be aware that their students recognise the value of using smartphone apps as an adjunct to the learning they gain in their limited time in the classroom.

- Teachers should perhaps receive training in the facility of apps such as WhatsApp and Instagram for uploading videos and photos, as well as in how to communicate and exploit them, and their lexical context.

- Teachers should place greater emphasis on the importance of EFL to the economic future of the students and the Kingdom, as although the students have received such messages via government initiatives and statements, the findings of the study show that motivation to learn is enhanced by teacher encouragement and guidance from both teachers and peers, both in the classroom or via social media.

- Teachers must be aware of how their students learn, and understand how they can be involved in better satisfying their individual needs. Training in the use of mobile app learning can help them to understand the benefits identified by their learners, and enable students to expand their autonomous learning activities beyond the classroom.

- Students can be motivated to learn independently of the teacher, on whatever app they prefer, and to become more involved with fellow learners, either in the same class or institution, or indeed across the world. Although the students in this study were not

interviewed specifically about the reasons for not utilising the faculties provided by the app, their embracing of the technology and the easy access it offers to learning indicates an awareness of the opportunities it offers for self-improvement,

- A community of learning can be created by students, first with colleagues and then with their wider peer group, to more fully employ the opportunities for interactive learning which are not usually taken up when they are left to their own devices.

It may appear somewhat anomalous that a study based on the examination of student perceptions of mobile learning and the smartphone app should result in a range of reforms being suggested which focus on the role of the teacher. This is simply because in the course of the research, the learners showed a considerable awareness that the classroom and textbooks are insufficient for their needs, and indeed somewhat frustrating in their limitations. The findings and discussion of this study show that students are motivated to learn - they know their future is at stake. It is the job of the teacher to facilitate their progress, and this demands a change in the traditional attitudes of the teacher as an authority or presenter of knowledge. This is a one of the first studies in a new environment, and the significance of social media in the promotion of autonomous learning through mobile technology is based on the value placed on its use by those who use it, namely the students. This presents an opportunity for Saudi teachers to consider how they can better fulfil their pedagogic responsibilities to their learners, given that their students have, at least broadly, indicated their approval of the process in this study.

It is difficult to see what threats autonomous learners might pose to the cultural imperatives of the state. The Saudi government is already using technology to compete in the global

environment and markets, and only by enhancing the quality of higher education can this progress be maintained. The participants in this study have, in their own way, shown how this can be achieved.

7.6.1 Recommendations for future research

This study provides a firm basis upon which to further explore learning development technology. The methods it employs are in widespread use in the social sciences, and are thus respected. Furthermore, they have been employed with considerable reflection and explanation for future researchers, and may perhaps enhance their methods of research and data collection.

In the planning of this research, where the focus of the investigation was learner autonomy and motivation, it was considered appropriate not to tutor the participants on the detailed operation of the app as it was considered that this would show the willingness and motivation of students to carry out their own 'exploration' of the app faculties. While this may be considered a weakness, it is a novel way of learning in the context of Saudi Arabia, and it was considered appropriate as a way of determining how far students are able to adjust their learning to new tools and opportunities. It provides a basis for other researchers to consider developing beyond this limitation, but does not detract from the cogency of the proposals for making changes to teaching and learning. Indeed, the recommendations presented here provide a building block not only for the advancement of learning, but will also facilitate the assessment of learning progress and other outcomes as they are implemented.

Whilst the study should prove to be invaluable in ascertaining Saudi students' perceptions of new mobile learning practices, future research could explore the views and practices of teachers,

instructional designers and policy makers. That is, social media activities in a DBR context have, overall, been given some student approval in this research, and now the providers should be asked for their input in the light of the potential for improving EFL teaching and learning in a Saudi context. The design principles generated by this study are Saudi-based conclusions which may limit the transferability of software seeking to accommodate a more diverse range of national educational frameworks.

This study is concerned with the Saudi experience and its need to improve EFL learning outcomes, in this case by using the smartphone and social media. No specific language learning skill was made the focus of this study. Therefore, other researchers may wish to explore the outcomes of mobile learning and mobile social networking across different aspects of language learning. The current study focuses particularly on the role of learners and the cognitive and social processes they employ. Further studies will be necessary to investigate the teacher's role in this new environment. Research should be dedicated to investigating teachers' awareness of the particular features of the mobile learning environment and how their understanding of these features might influence their teaching goals, strategies, plans and design. We also need to take into account self-regulating study habits, which play an essential role in students' readiness to engage cognitively. Shea and Bidjerano (2012) argue that "individual difference characteristics interact with instructional environment in intricate ways to produce specific learning outcomes" (p. 317). This could offer further insights into the differences in learner achievement in an online environment.

This section has highlighted the exploratory nature of this study and how it may provide a basis for further research. Importantly, the recommendations, based on the findings, could be used to

advise policy makers and others in authority in their endeavours to improve EFL outcomes in Saudi Arabia as part of Vision 2030 and its long-term objectives.

7.7 Limitations of the Study

The current study is not without limitations, and these have been commented on at the stages at which they arose in the study. Perhaps the most significant limitations identified are: (i) the fact that it was necessary to be in practical contact with student participants in Saudi Arabia while the researcher was based in England, which made the review of the participants' study needs problematic, and (ii) the need to respect and work within the cultural parameters of Saudi Arabia in terms of educational, gender and social factors, which created some limitations. No doubt the second concern is appropriately universal, and therefore the most obvious limitation of the study is cultural. The subject participants were based in Saudi Arabia, and the researcher, being male, was permitted to conduct enquiries with male and female participants with a one-way mirror class, at Al-Imam University. Consideration was given to the effect of the apparent gender-specific nature of the research and how it could potentially be overcome. This was not possible for a single male researcher working alone, and some thought was given to seeking the assistance of a female colleague on the female campus to help with data collection. This was not deemed appropriate for several cultural reasons, not least of which was the need for significant interaction with that ‘assistant’, which would have been inappropriate even in an academic setting. What is more, this study is conducted for the award of a PhD degree to the author and must therefore be his own work, and with the assistance of female proxy.

Practically and physically it was therefore not possible to overcome this limitation in the Saudi

context, yet it would have undermined the validity of the study to simply make that an excuse and to move on. Thus, considerable time was spent in the course of the literature review to ascertain whether other researchers in other contexts had found any significant disparity between male and female students in the use of social media in learning, and indeed more generally. Evidence from previous surveys and studies conducted elsewhere in the world indicated no appreciable difference in the attitudes of female respondents to the use of mobile social media in education.

Financial limitations and the institutional requirements of the university to which this work is to be presented for the PhD degree required the study to be small in scale, particularly in the post-test qualitative interview process. The investigation of the objectives would certainly have been improved by a broader study of the collective student body learning English as a second language. This would have produced a more comprehensive set of findings and insights on which to base analysis of the value of the smartphone app as a support to learning.

Much reflection was therefore given to the research methods and design in order to ensure as far as practically possible that the study reflected the objectives within the parameters in which it could be conducted. Financial limitations also constrained the choice of statistical analysis methods, which to some extent compromised the clarity in the presentation and understanding of the results. This researcher is an English teacher at the university in which the research was conducted and cannot claim any expertise in the use of statistical analysis methods, nor was it possible in the time available to develop skills and understanding to match those of qualified statisticians.

This limitation was exacerbated by the logistical difficulties arising from the fact that the research participants were based in Saudi Arabia whilst the researcher was in England for study purposes. This was completely unavoidable, and there was limited time to conduct the fieldwork, which in turn impacted on the study design. These factors necessitated a limitation to the number of topics examined and participants interviewed, but given the safeguards outlined throughout this thesis, this does not undermine the quality of the results, analysis, discussion and conclusions. The author has noted previously that human errors in the processes of data gathering by questionnaire and interview were, with the benefit of hindsight, taken into consideration in the assessment of the information. They do not have a particularly significant impact on the findings. Nevertheless, as must be the case with any principled and thorough research, ways could have been reflected upon to correct them. Clarification of participants' answers, for example, or obtaining further input on opinions, was not possible due to logistical issues, but perhaps helped the researcher to avoid an obsessive approach to the study process. No mention was made in the early explanations about any 'benefit', apart from saying that it was a matter for participants to express their perceptions of any improvement in their learning experience. The DBR programme did not address revision and testing. That is a topic for future study. This project had to retain a higher degree of flexibility than is present in classic action research programmes to facilitate the development of students' learning practices.

It can be suggested that the design principles for mobile learning are applicable across a range of EFL contexts, but their practice is context- and culturally specific. The effectiveness of application will definitely differ from one context to another. Nah (2008) reached similar conclusions in his research. Saudi Arabia may not differ from other parts of the world in the degree of mobile

phone penetration, but the educational use of mobile phones was hitherto eschewed in the national education and cultural framework. Student acceptance and readiness to shift from traditional teacher-directed to more collaborative student-centred learning had to be encouraged. It had not been experienced before, and most students of both genders maintained a level of questioning distrust which raised some obstacles to the application of standardised design principles.

The teacher-researcher approach utilised in this study was occasionally a limitation given that managing data collection for a research project while at the same time taking responsibility for a teaching task was a challenge. Being a teacher-researcher, as noted by Gregson (2004), may not allow for deeper reflection and analysis of data, since teachers tend to notice and record what they expect to see and usually make quick decisions, and research conducted in this way may lead to superficial results. This researcher felt an inclination to intervene, or perhaps interfere, in the learning process with more directed assistance, but reflection on his responsibilities led him to resist this temptation. The students were in charge, not the teacher. Collaboration with students in the design, along with consideration of their reflections and feedback, were all the result of deliberate decisions designed to ensure accurate student-volunteered findings. This certainly offered the teacher-researcher vital lessons about the importance of recognising gaps between the theory and practice of learning and about collecting data to track progress over the long term (Gregson, 2004). In the course of the study design process in practice, the teacher-researcher was able to act on findings immediately (Mitchell, 2002).

Mackey and Gass (2005, p151) note that observed participant behaviour may be taken as a possible explanation of positive results simply because it is observed, but warn that such an

apparent correlation should be questioned "as students and teachers begin to feel more comfortable and natural about being observed". In this study the researcher had to create student-student and student-teacher relationships in order to overcome suspicion about the nature of a process so divorced from these learners' experience. The perception of the teacher as the project progressed was not so much of a need to question any gap between observation and reality as to note the development of new skills and attitudes. The task design itself was aimed at providing the researcher with flexible iterative research tools that included many repeated processes of investigation and evaluation of student behaviour. It should also be noted that as the student participants opted in, they may have been more willing to engage in the process, and this may have led to more positive results compared to those chosen through, for example, purposive sampling.

This study is a novel design-based research approach to pedagogy and learning, which given its approval rating by student stakeholders in their own education needs further examination in terms of outcome improvement. No pre- and post-assessment tests were conducted, so no conclusion can be drawn on the correlation of the value of social media learning with grade achievement. That was not the aim of the DBR project. What the study did was to collect a considerable amount of new data about student perceptions of mobile phone and Instagram use as teaching tools in student-centred EFL classes in culturally and politically conservative settings. It aids our understanding of how students perceive the introduction of mobile phone technologies and private social media sites into their learning journeys. There is little purpose in introducing new practices unless they are viewed as a positive development in learning by the users. The investigation of the linguistic achievement is the next step, an assessment of value to

grade outcomes in a more communicatively-based context of language use in a developing EFL program and curriculum.

7.8 Key Findings and Contributions of the Study

Despite the limitations acknowledged in the previous section, this research has stimulated reflection on a method of supporting learning in the profoundly traditional educational framework of Saudi Arabia. It provides a sound basis for encouraging students to use their social devices to enhance learning. It was not undertaken in a static environment where the future of learning is fixed and predictable, because the Kingdom has understood the need to change the way its subjects develop their own economic futures and that of the nation. Indeed, the findings show that developing the range of tools and methods used for study will facilitate learning not only in the classroom but potentially as a social activity.

The following points summarise the main findings:

1. This research concludes that the functionality offered by mobile phones can have a positive impact on language learning if the conditions are favourable. mobile social media applications are able to provide new opportunities that facilitate learning and make it easier, useful, portable, interactive, accessible, multimodal and controllable. These affordances can redress the constraints of context, time and lack of connectivity with teachers, friends and learning resources.
2. The affordances offered by the latest mobile phone technology undoubtedly require the transformation of the roles of the teacher and of the learners. At the students' request, the teacher / researcher in this study became more of a mentor, providing guidance on

demand and learners changed from being passive receivers of knowledge to information generators, collaborators, information seekers/givers and critical thinkers.

3. Technology fostered teacher-student and student-student interaction in turn can lead to the collaborative construction of knowledge.
4. The findings of this study highlight that students' perceptions of contextual mobile language learning are a transformative and positive addition to their learning experience; furthermore, mobile learning impacts student engagement and collaboration across formal and informal settings.
5. This research has shown that from the students' perspectives, EFL education in Saudi Arabia is still dominated by the teacher, and there is a lack of meaningful opportunities for English practice both inside and outside the classroom.
6. It appears that the experience of learning online can transform many of the negative beliefs about learning and in this study, many learners began to see it as easier and more enjoyable.
7. The use of the mobile learning environment impacted in learners' use of learning strategies and it is likely that in the future, they will better understand how the affordances of mobile phones could enrich the learning environment.
8. It seems likely that social media collaborative learning, which in this study was based around the familiar questioning-responding leading environment, will encourage some shy, less confident students to participate and engage more productively than in a face to face classroom. Various 'mobile behaviours' were identified in this study, including privacy protection and 'identity hiding'. Most of the students did not use their real names

or photos when communicating through WhatsApp, as is noticed in most captures (discussed in Chapters 4 and 5). This gave rise to cultural issues relating to the Saudi context of conservative Islamic practices, when it was suggested by two male students that young users of social media are usually cautiously attempting to attract other users from the opposite sex without giving away too much personal detail.

9. It might be suggested that interest in mobile phone technology alone is insufficient to guarantee a successful MALL experience and significant language learning. In other words, the use of and interest in technology alone seems to be unable to encourage those participants who are not motivated to learn English, to alter their attitude and become more inspired or invest to in learning English using mobile phones.
10. It could be argued that not all students want to use technology for learning despite acknowledging the learning benefits that can be obtained from mobile phone learning using WhatsApp. A few participants in this study are unlikely to accept the inconvenience of shifting their learning styles in the future and seemed to be hesitant about receiving learning material and countless messages out of class. These participants considered mobile phone learning intrusive to their personal and family lives.

It is easy to suggest that traditional methods such as behaviourist teacher presentation and textbook learning are now inadequate to meet society's needs for development because technology is the way of the future. Yet the mere fact that something is relatively new and innovative does not make it better, and this study has shown that some students prefer to learn in the traditional manner, using books, pens, paper and memorisation. However, the study also shows that using social media for learning is a valuable way of learning for those willing to

embrace the technology and the opportunities it affords.

The findings of this study highlight that students' perceptions of contextual mobile language learning are a transformative and positive addition to their learning experience; furthermore, mobile learning impacts student engagement and collaboration across formal and informal settings. Previous studies have found the impact of mobile learning to be crucial for the enhancement of student-centredness, motivation and collaborative learning (Carter, 2009; Kukulska-Hulme, 2009; Pham-Nguyen et al., 2008; Sam, 2016; Awada, 2017; Keogh, 2017). This research project extends the understanding of mobile learning as something which provides rich out-of-class learning opportunities in contexts that are characterised by limited language learning opportunities, and socio-cultural restrictions which affect face-to-face student interactions. The moderating facilities of the social media applications WhatsApp and Instagram allow sharing through many different media, and allowed the cohorts under investigation to collaborate and to form learning groups. They broke down initial 'tribal' factions in the classrooms and enabled students to use English as a tool to communicate across cultural barriers.

This research has shown that from the students' perspectives, EFL education in Saudi Arabia is still dominated by the teacher, and there is a lack of meaningful opportunities for English practice both inside and outside the classroom. This situation raises some important issues about how both EFL students and teachers can use technology for learning, and whether the use of technology can have a positive impact on their EFL experience. The students indicated that before the study they were using various technological means for learning and for casual purposes, including social media. However, they were not invested in the concept of collaborative learning. The use of the university site for information exchange, namely the

university website portal, did not allow direct and interacting communication. Such technologies were not aimed at enhancing student collaboration, but rather were used as tools for making announcements or for assessment. In other words, the students experienced the same traditional pedagogies, but presented through the medium of new technology. The researcher's personal experience in this context indicates that university teachers use technological tools in response to course objectives, which may be valuable in themselves as guides, but which fail to contribute to language learning.

The findings of this study illustrate the importance of EFL teachers having the motivation to use technology in ways which are innovative from the perspective of students who felt deprived of the experience of continued learning. WhatsApp and Instagram are more than just communication tools for course-related information, but provide authentic language communication opportunities involving students in using English in an autonomous and self-directed way. EFL teachers in Saudi Arabia must acknowledge that they can benefit from understanding student perspectives. No systematic attempt was made in this research to gather the views and opinions of lecturers as a group because they are not direct recipients of knowledge and learning.

It is the students and their future competency and economic success which is the focus of the Saudi Vision 2030 change initiative. Instead of seeing WhatsApp or Instagram as distractions for students, this study shows that teachers should at least be considering them as aids to their teaching. The traditional learning pedagogies described by learners as 'ineffective' and 'boring' should now be consigned to the past. This is not intended as an advertisement for WhatsApp or Instagram, but there are several social media platforms on the internet which are free to access

and use for students to experience the empowering benefits of autonomous learning, exploration and collaboration. Participants did mention technical obstacles such as limited Wi-Fi access or poor 3G coverage, but the competitive market will ensure that improvements continue, as they have for the last two decades of digital development and cost reductions.

The study has emphasised the willingness and preparedness of EFL students to adapt their learning to a more collaborative student-centred and mobile-based learning style driven by a familiarity with and interest in using new technologies. The use of social media enabled students to overcome feelings of nervousness and awkwardness in communicative exercises in English in new and exciting ways. There was some initial hesitance in using the new and relatively unknown social media platforms for learning. These were seen as fine for whatever young adults communicate with their family and friends, but learning needs were considered more a personal and private activity (Kukulska-Hulme et al., 2015; O'Neil and Loftus, 2013).

Pedagogically, students may also be “comfortable with their current means and knowledge for completing some tasks and may be overtly reluctant to adopt or adapt to new methods" (Koole, 2006, p. 41). These communicative weaknesses were most likely connected to their experiences with previous teachers' lecturing methods, to which the students had been accustomed throughout their EFL learning. This relative passivity was reflected in early student contributions, but learners were able to involve themselves in more autonomous and self-directed ways, perhaps, it is concluded, due to behaviourist learners being encouraged by the more exploratory practices of the constructivist or connectivist thinkers.

Reluctance to use mobile technology for learning can be expected from traditional teachers (Abdous et al., 2012). The interview data in this study did not reveal any noticeable resistance to student-centred learning or the utilisation of social media on the part of the students, although they did need some convincing about the potential of their mobile phones and mobile Instagram and WhatsApp as tools for improving their EFL learning. They were convinced by practice, given that any persuasion or intervention by the researcher would have introduced a bias into the process which would have undermined the student-directed nature of the data. It could be argued that not all students want to use technology for learning even though they acknowledge the learning benefits that can be obtained from mobile phone learning using WhatsApp. A few participants in this study, particularly females, are unlikely to accept the inconvenience of modifying their learning styles in the future, and seemed to be uncomfortable about receiving learning material and countless messages out of class. These participants considered mobile phone learning to be something which intruded on their personal and family lives, and therefore a distraction.

The data from the study leads to the conclusion that Saudi EFL students have to be taught to recognise and appreciate the diversity of the local and international environment as a stimulus for learning and the eventual improvement of their university outcomes. English language communication is only of value when it is used in realistic settings, and contextual diversity promotes such learning activities both in and out of the classroom, in marked contrast to traditional Saudi EFL instruction with its long history of in-class activities isolated from the external environment, and rooted in grammar and linguistics. This explains why students commented on 'irrelevance' and 'insignificance'. Not all ecological representations are or can be

made relevant, nor can they reinforce educational or linguistic values, and indeed ensuring cultural acceptability is a responsibility of the teacher, but reflective planning by the lecturer can easily overcome such problems to provide a more authentic learning environment in collaboration with the class. Indeed, the various traditions and social behaviours of their students provides a broad range of customs and habits which can provide the students with the basis for authentic and collaborative language learning activities as well as for increasing knowledge about and tolerance of other regional or world needs and views.

Furthermore, this DBR methodology had never been used before in any of the Gulf Cooperation Council (GCC) countries, in contrast to Canada and the US which was proved to be useful and contributed to this thesis knowledge. Although there have been criticisms of using a DBR approach in short-term projects, it has recently demonstrated its usefulness and added value to research conducted in South Africa (Pool and Laubscher, 2016).

Another factor underpinning 'identity hiding' mentioned by students in both the male and female groups was the fear of sanctions amongst Instagram users in Saudi Arabia for discussing controversial topics, particularly those related to government or religious issues. This is important, since the Saudi government still regulates freedom of expression strictly. Boyd's (2015) analysis of the online behaviour of American teens showed that users who have something to hide are those who need privacy, because revealing transgressive behaviour might get them into trouble with parents and teachers. Saudi online users generally need to consider a broader range of authorities, both societal and governmental, when communicating via social media. These issues, and the concepts of privacy and identity hiding, are however in some flux due to current political changes taking place in the Arab world in particular. Further research is

needed to explore these political changes and their impact on the use of social media, particularly in the Arab world, and this will be elaborated on further.

The present study shows that mobile technologies and social media such as WhatsApp are useful and welcomed by student-consumers in educational settings. While some students in the cohort investigated initially had reservations around using their mobile phone specifically as a learning tool, their enthusiastic willingness to share their personal experiences of learning shows great promise for the future. According to Algarfi (2014, p.248), student-centred learning in general is "the core of [a] democracy system, which shapes the western countries political system that starts directly or indirectly from the classroom" and one wonders whether such a learning strategy can have a place in a centralist education system like that of Saudi Arabia. Change in social and educational practices have however entered the Saudi political process, with votes for representatives in the newly approved civil councils and elected student councils in universities which seek to advance learner interests in the manner of student unions in Western universities.

Saudi students are aware of the potential of these technologies for making their voices heard, not least as a result of their participation in this study through the activities developed and feedback processes which emphasised the primary importance of their contributions. Student voices enhance their contribution to the learning process. Holliday (2015, p.87) commented "I simply do not believe that the English-speaking West has a monopoly on the characteristics of individualism, critical thinking …". Autonomy and critical analysis in learning in Saudi Arabia are not simply the result of trying to transplant Western norms, but an acknowledgment of the fact that student voices and needs were neglected for decades, and that this arguably inhibited social and business progress because of the poor outcomes and lack of contextual understanding.

In the digital era, means are available to students through which they can see how effective pedagogies are being utilised in different parts of the world. The potential of technology, and mobile technology and social media in particular, has made them aware of their own learning deficiencies and how they can effectively be dealt with through greater contextual interaction.

The results of this study provide an effective insight into how improvements in language education can be implemented beyond those envisioned in the classroom-centred Vision 2030 initiative, which anticipates paper-free institutions by 2020. It is evident that not all learners are willing to embrace technology alone as a way of accumulating knowledge, as everyone learns in different ways. However, smartphone apps can provide valuable support to Saudi students' learning, although care must be taken not to undermine the potential of traditional behaviourist learners. Whilst this has been evident in this study of the smartphone app support tool, it also has implications for the plans for technology as the basis of classroom learning.

7.9 Final Remarks

Finally, we are at the beginning of the development of new insights into the development of 21st century pedagogies in Saudi Arabia. The impact of these new technologies, particularly on culturally conservative educational settings, cannot be underestimated. While the world is aware of the rather temporary effects of globalisation and rapid change of technology, social networking sites have considerable potential for fuelling change. This can be harnessed for the benefit of student autonomy and motivation, and to instil responsibility for students' own presents and futures. This study can be seen as a path into unknown territory, a move towards understanding how mobile technologies can overcome ineffective or even debilitating teaching

approaches and democratise the learning process for students. Young Arabs are shaping a new world, and are reaching out with English-language skills and a desire to share and collaborate. The use of technology is considered indispensable in this quest, but not simply because it is available. Its value has to be proven, and the DBR approach taken in this study shows the support and feedback of the participants, giving rise to a diverse set of principles and practices which should incorporated into the state education framework.

The implications from this case study would suggest that the use of social media results in a learner role which is more focused toward seeking and providing peer critique, support and guidance, and as a result, there is a need for learners to be fully engaged and be willing participants within group learning. The learner role when using collective various posts therefore appears to meet the requirements of a connectivist learning environment as the learners' role becomes increasingly concerned with self-management, knowledge management and network building within the context of the social media community, and the need to take greater responsibility for individual learning, which does not necessarily occur naturally.

While the case study demonstrates that some elements of connectivism can be seen, it is clear that the roles identified were not adopted in all cases, particularly among learners. As a result, some learners may have failed to actively or fully engage with the project, and consequently, their level of learning may have been affected. This is likely to be resolved if the project were assessed, and this would need to be carefully considered in the future when setting such activities. From this case study, it is possible to see that social media usage had a positive effect on the manner in which teaching and learning took place. However, this was a relatively a short project following which learners appeared to disengage with the group in social media created.

The implication of this case study therefore suggests a need for further empirical research to be conducted within this area.

Overall, this research has provided evidence that the use of smartphone apps can provide an effective way for students to learn that supplements in-class provision. Furthermore, the use of technology is particularly pertinent at this time due to the limitations on students' movements as a result of the Covid 19 virus, including the use of smartphone apps, and this research provides a useful contribution to the teaching methods currently being adopted during this crisis.

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Appendices

Appendix A Outstanding Paper

INTERNATIONAL RESEARCH CONFERENCE
CERTIFICATE OF BEST PRESENTATION AWARD

ICCSCLIL 2018 : 20th International Conference on
Computer-Supported Collaborative Learning and Individual Learning
hereby certifies that
Abdulrahman M. Alshabeb
has presented an outstanding work entitled
The Use of Mobile Social Media Applications for Language Learning: A Case Study of Higher Education in Saudi Arabia

LONDON, UNITED KINGDOM

Authorized Signature

MARCH, 15-16, 2018

Appendix B Consent Form form for Gatekeeper

Permission for the research to proceed is being sought

Title of the project

The Use of Mobile Social Media Applications for Language Learning by Students of English as a Foreign Language in Higher Education in Saudi Arabia

Name of Researcher and School/Faculty

Abdulrahman Mohammed Alshabeb, Faculty of Education, Health and Wellbeing; University of Wolverhampton.

Permission for the research to proceed is being sought from the Dean of the College of English Language and Translation, Al-Imam University:

I am writing to ask your permission to carry out a research project in the English Language and Translation College, Al-Imam University. I currently on the process of conducting a research PhD study at the University of Wolverhampton.

Explanation of the Study:

The idea of integrating technology in education has received increasing interest over the past decade, and many countries have implemented new projects to acquaint students with educational technologies, including mobile devices. I know from my status as a lecturer at the university that the Vision 2030 initiative has made remarkable change to the way teaching is delivered and learning gained in Higher Education. My particular focus is on the use of smartphones as a learning tool rather than simply a social medium. This research is crucial as it invites us to comprehend how EFL students in Saudi Arabia perceive mobile social media applications as helping or inhibiting them in this process. I am intending to investigate and analyse the use of social media mobile applications on learning English.

Invitation to participate

This is a request to your students to participate in this experimental design study. Please be informed that there are no personal risks or cultural imperatives linked to the research. The design of the research will be two iterations extracted from the design-based research. The data collection procedure and processes will be in several stages. The first stage will occur prior to the mobile language learning task and use of social media applications (pre-learning task). The second will be the mobile language learning task (during-learning task), with the final stage of interviews conducted after the learning task (post-learning task). There will be an introductory session where details, training and instructions will be given. I am hoping to pay a visit to your university from around the 8th of April and 30th July 2019.

<table>
<tr><th>Order</th><th>Method</th><th>Stages of design-based research (Reeves, 2006)</th></tr>
<tr><td>1.Pre-learning task</td><td>*Pre-task
questionnaire, followed by
focus group/interviews</td><td rowspan="3">1. Analysis of practical problems

2. developments of solutions

3. Iterative cycles of analysing, testing, discussing and solutions refinement.

4.Reflections to produce design principles</td></tr>
<tr><td>2.During learning task</td><td>* WhatsApp/Instagram observation

* Stimulated recall

* Analysis of WhatsApp discussion</td></tr>
<tr><td>3. After learning task</td><td>* Post-task
focus group/interviews</td></tr>
</table>

Taking part is voluntary and all interviews will be carried out whenever it is suitable for the participants and it will be held in the university. While conducting the interviews, I will make sure that the process

does not interfere at all with the day-to-day routines and activities of the university. As such, I am requesting formal approval to be allowed access to your institution in order to gather data for my piece of research.

Research Plan and Methods

In this study, approximately the experiment design be used to collect data from a number of students (14) of both male class and (14) of female class. However, complete consent form has to be given by the participant, otherwise they will not be carried out. As for all Information gathered, it will be entirely private; therefore, the university and the respondents will not be mentioned in any written reports.

Further Information

Should you require any additional information regarding the study, please feel free to contact the researcher. I look forward to receiving your approval to allow me to gain access to your institution by reading and singing the following consent form next page.

Yours sincerely,

Abdulrahman Mohammed Alshabeb (Researcher)

Email: [redacted]

SA: [redacted]

Professor John Traxler (Director of Studies)

Faculty of Education, Health and Wellbeing, Wolverhampton

University Email: [redacted]

Appendix C Approval from the University of Wolverhampton

From: [redacted]
Date: 2 March 2019 at 6:13:45 am BST
To: "Alshabeb, Abdulrahman M." [redacted]
Cc: FEHW Ethics <[redacted]
Subject: Emailing - AA Ethics FormDB Feedback 02040219.pdf

Dear Abdulrahman,

Please find attached your ethics submission. This has been approved subject to conditions. The submission says it has appendices, but these have not been given to the panel. I have therefore asked for these to be submitted. (If you think you have already sent them to the FEHWEthics@wlv.ac.uk I would be grateful if you could let me know).

If you need any further guidance, please do not hesitate to contact me.

Best Regards,

[redacted]

[redacted]

Director of the Institute of Education

Associate Dean | Faculty of Education Health and Well-being

University of Wolverhampton | Samuel Johnson Building |

Gorway Road | Walsall | WS1 3BD

T[redacted]

[redacted]

Appendix D Consent form for students

Research Consent Form to Students

Name of researcher
Abdulrahman Mohammed ALSHABEB
Title of study
The Use of Mobile Social Media Applications for Language Learning by Students of English as a Foreign Language in Higher Education in Saudi Arabia

Dear Student,

I am a postgraduate student conducting doctoral research at the faculty of education, health and wellbeing at the University of Wolverhampton in the United Kingdom on the following topic:

The Use of Mobile Social Mobile Applications for Language Learning by Students of English as a Foreign Language in Higher Education in Saudi Arabia: A case Study

Explanation of the Study

The idea of integrating technology in education has received increasing interest over the past decade, and many countries have implemented new projects to acquaint students with educational technologies,

including mobile devices. This research is crucial as it invites us to comprehend how EFL students in Saudi Arabia perceive mobile social media applications as helping or inhibiting them in this process. I am intending to investigate and analyse the use of social media mobile applications on learning English.

This is a request to look into your participating in this design based research study. Please be informed that there are no risks linked to the research. The design of the research will be two iterations extracted from the design-based research. The data collection procedure and processes will be in several stages. The first stage will occur prior to the mobile language learning task and social media application (pre-learning task) which involve pre-task questionnaire interviews and focus group interviews. The second stage will be the mobile language learning task (during-learning task) focus group AND interviews, whereas the final stage will be conducted after the learning task (post-learning task) focus group interviews. There will be an introductory session where details, training and instructions will be given.

I am happy to answer any queries you may have about this research.

Best regards,

Abdulrahman Mohammed Alshabeb

Faculty of Education, Health and Wellbeing, University of Wolverhampton

Email: [redacted]

T: [redacted]

Signature: _____

Please read and complete this form carefully. If you are willing to participate in this study, circle the appropriate responses and sign and date the declaration at the end. If you do not understand this and would like more information, please ask the researcher.

- I have had the research satisfactorily explained to me in verbal and/or written form by the researcher. **YES / NO**
- I understand that the research will involve answering a questionnaire and/or being interviewed. **YES / NO**
- I understand that I may withdraw from this study at any time without having to give an explanation. **YES / NO**
- I understand that all information about me will be treated in strict confidence and that I will not be named in any written work arising from this study. **YES / NO**
- I understand that any recorded material of me will be used solely for research purposes and will be destroyed upon completion of the study. **YES / NO**
- I understand that the information obtained will be used to further knowledge about Social Media Assisted Learning Language can best be used to help language learning and teaching. **YES / NO**

I freely give my consent to participate in this research study and have been given a copy of this form for my own information.

Name: _____

Email: _____

VOCABULARY LIST AND CEFR CORRELATION

The keywords of the **Oxford 3000™** have been carefully selected by a group of language experts and experienced teachers as the words which should receive priority in vocabulary study because of their importance and usefulness.

AWL **The Academic Word List** is the most principled and widely accepted list of academic words. Averil Coxhead gathered information from academic materials across the academic disciplines to create this word list.

The Common European Framework of Reference for Languages (CEFR) provides a basic description of what language learners have to do to use language effectively. The system contains 6 reference levels: **A1**, **A2**, **B1**, **B2**, **C1**, **C2**. CEFR leveling provided by the Word Family Framework, created by Richard West and published by the British Council. http://www.learnenglish.org.uk/wff/

UNIT 1

acknowledge *(v.)* AWL, A2
address *(v.)*, B2
advance *(v.)*, B1
aspect *(n.)* AWL, A1
assess *(v.)* AWL, A2
capable *(adj.)* AWL, B2
contact *(n.)* AWL, A1
criticism *(n.)*, B2
effective *(adj.)*, A1
ethical *(adj.)* AWL, C1
executive *(n.)*, A1
exemplify *(v.)*, C2
expert *(n.)* AWL, A2
favoritism *(n.)*, C2
issue *(n.)* AWL, A1
negotiate *(v.)*, B1
outline *(v.)*, B1
perspective *(n.)* AWL, B1
potential *(n.)* AWL, A2
staff *(n.)*, C1
style *(n.)* AWL, B1
title *(n.)*, A1

UNIT 2

anecdote *(n.)*, C2
appropriate *(adj.)* AWL, A1
associate *(v.)*, C1
bias *(n.)* AWL, B2
cautious *(adj.)*, C1
chaos *(n.)*, B2
conduct *(v.)* AWL, A2
cycle *(n.)* AWL, B1
embrace *(v.)*, B2
enthusiasm *(n.)*, B1
inflexible *(adj.)* AWL, B2
investor *(n.)* AWL, B1
moderately *(adv.)*, C2
morale *(n.)*, C1
norm *(n.)* AWL, B2
open-minded *(adj.)*, C1
point out *(phr. v.)*, B2
recognize *(v.)*, A1
reward *(n.)*, B2
stifle *(v.)*, C2
stimulating *(adj.)*, B2
stumble upon *(phr. v.)*, C1
trend *(n.)* AWL, A2
turn out *(phr. v.)*, A2

UNIT 3

assume *(v.)* AWL, A1
barrier *(n.)*, B1
burden *(n.)*, B1
carefree *(adj.)*, C2
confusion *(n.)*, B1
contradiction *(n.)* AWL, B2
contribute *(v.)* AWL, A2
frustration *(n.)*, B2
guidance *(n.)*, B1
in charge of *(phr.)*, B1
initiation *(n.)* AWL, C2
isolation *(n.)* AWL, B2
marker *(n.)*, C2
milestone *(n.)*, C2
morally *(adv.)*, C1
pinpoint *(v.)*, C2
resent *(v.)*, C1
reverse *(v.)* AWL, B1
run *(v.)*, A2
satisfaction *(n.)*, B1
sibling *(n.)*, C1
transition *(n.)* AWL, B1

UNIT 4

amateur *(n.)*, C1
appreciation *(n.)* AWL, C1
apprentice *(n.)*, C2
breed *(n.)*, B2
circulation *(n.)*, B2
clone *(v.)*, C2

convention *(n.)* AWL, C2
development *(n.)*, B2
encounter *(n.)* AWL, B1
expand *(v.)* AWL, A2
gallery *(n.)*, B1
generation *(n.)* AWL, C1
identify with *(phr.)*, B2
marketing *(n.)*, B1
operation *(n.)*, A2
overseas *(adv.)* AWL, C1
panel *(n.)* AWL, B2
recall *(v.)*, A2
regard *(v.)*, A2
series *(n.)* AWL, A1
take note of *(phr.)*, C1
unique *(adj.)* AWL, A2

UNIT 5

adverse *(adj.)*, C1
alter *(v.)* AWL, B1
artificial *(adj.)*, B2
commodity *(n.)* AWL, B2
compound *(v.)* AWL, C2
consist of *(phr. v.)*, A2
consume *(v.)* AWL, B1
consumer *(n.)* AWL, A1
controversy *(n.)* AWL, B1
debate *(n.)* AWL, A1
disturbing *(adj.)*, C1
ethics *(n.)* AWL, C1
hurdle *(n.)*, C2
identical *(adj.)* AWL, B2
modification *(n.)* AWL, B2
optimal *(adj.)*, C1
reaction *(n.)* AWL, B1
significant *(adj.)* AWL, A1
substantial *(adj.)*, A2
superfluous *(adj.)*, C2
trait *(n.)*, C1
ultimate *(adj.)* AWL, B1

UNIT 6

advancement *(n.)*, C2
attitude *(n.)* AWL, A1
career path *(n.)*, C1
climb the ladder *(phr.)*, C2
commute *(n.)*, C2
concept *(n.)* AWL, A1
count on *(phr. v.)*, B2
currently *(adv.)*, A2
dare *(v.)*, B1
devote *(v.)* AWL, B1
face *(v.)*, C1
figure *(v.)*, B1
log *(v.)*, C1
loyal *(adj.)*, C1
model *(n.)*, A2
particular *(adj.)*, A1
peer *(n.)*, B1
point *(n.)*, A1
radically *(adv.)*, C2
rigorous *(adj.)*, C2
serve one well *(phr.)*, C2
stable *(adj.)* AWL, B1
stand out *(phr. v.)*, B2
structure *(n.)* AWL, A1

UNIT 7

ache *(v.)*, B1
adhesive *(n.)*, C2
adopt *(v.)*, A2
alert *(adj.)*, C1
biological *(adj.)*, B1
deprived *(adj.)*, C1
exploit *(v.)* AWL, B1
face to face *(phr.)*, B1
flammable *(adj.)*, C1
in all probability *(phr.)*, C2
inadvertent *(adj.)*, C2
inconceivable *(adj.)* AWL, C2
interact *(v.)* AWL, B2
mandatory *(adj.)*, C1
obvious *(adj.)* AWL, A2
odds *(n.)* AWL, B2
reunion *(n.)*, C1
synthetic *(adj.)*, C2
unreliable *(adj.)* AWL, C2
vastly *(adv.)*, C2

UNIT 8

ambition *(n.)*, B1
apex *(n.)*, C2
beneficiary *(n.)* AWL, C2
brutal *(adj.)*, C2
burnout *(n.)*, B2
collapse *(v.)* AWL, B1
conclude *(v.)* AWL, A2
dominate *(v.)* AWL, B1
era *(n.)*, B1
escalate *(v.)*, C2
former *(adj.)*, A1
fundamental *(adj.)* AWL, A2
funding *(n.)* AWL, B1
integral *(adj.)* AWL, C1
intensity *(n.)* AWL, B2
invest *(v.)* AWL, B1
journalist *(n.)*, B1
modest *(adj.)*, B1
obsession *(n.)*, C2
reasonable *(adj.)*, A2
regret *(v.)*, B1
spectator *(n.)*, C1
ultimately *(adv.)* AWL, B1
vulnerable *(adj.)*, B1

Appendix F Online discussion board observation scheme (Nah, 2008, p. 280).

Week: Page:

No.	Type of interaction			Type of message	Content of message
	I-S	S-I	S-S		

Appendix G

– Welcome and Introductions Script

The participants in the Focus Group must be welcomed and relaxed, and looking forward to their discussion. I am Abdulrahman Alshabeb, a lecturer here Imam University and doing a research at the University of Wolverhampton in the UK, and I am here to listen to you talking about your smartphones.

(Put group at rest by asking innocuous questions you know the answer to;

- Who here owns a smartphone? (the demographic research prior to the meeting will have shown all participants own one – they feel a part of the 'team')
- Could you live without it? (probably not – a little joke)
- Don't worry, there is nothing in this study process which will deprive you of your precious life preserver!)

I am only interested in what you do with them, how they frame your life planning and the main focus of the group discussion is social media

- Do any of you use your smartphones for social media access? (all will say yes – enhances the group feel and relaxation process)

Well I'll will discuss this with you, and because I am conducting research into teaching methods, because I'm a teacher, I will be asking about what you use social media for and what you think about using it in your learning.

The study is called 'How can mobile social media platforms facilitate language learning and provide more opportunities for collaborative and autonomous learning experiences in the context of the Saudi Arabian higher education cultural framework? So you will note from the title that the focus of your role in this research is to find out if the use of mobile accessed social media can help your learning, and maybe make it more enjoyable and challenging.

It is your opinion which is important. I do not have one and if I did that would be completely unimportant because you are the students, you are the people whose learning I am most interested in, and so it is your opinion which is important

I might challenge some of the things you say, but please do not think I am disagreeing with you; I simply want to investigate why you think the way you do.

I will ask questions to prompt the progress of the discussion into areas which have to be covered in the study, but feel free to express opinions on whatever you want; please keep it to the topic title though, and please, if you disagree with anything that someone says, be polite and justify why

Ethics

You have all had the opportunity of considering and signing the consent form: just to reiterate,

- could everyone just confirm that they are ok with this conversation being audio recorded? it will only be listened to by the researcher and stored safely away from prying ears (what ever they are!)
- If this is not something that you are comfortable with then please feel free to leave the room at any point during the discussion.
- All of the information you provide will only be used by us for research purposes, not for marketing.
- You may leave at any time you feel uncomfortable, but please address your concerns initially to the moderator because I do want to know what you think and would like you to stay for the 90minutes
- We will finish promptly

Moderator Generic Prompts

Thank you for that, how about you, (someone who hasn't spoken on the topic much)

- how do you feel about that?
- What is your position on that?

Does anyone have a different view on that?

- Does anyone else agree or disagree with what has just been said?
- Does that fit with everyone else's view on that issue?
- What does everyone else think about that issue?

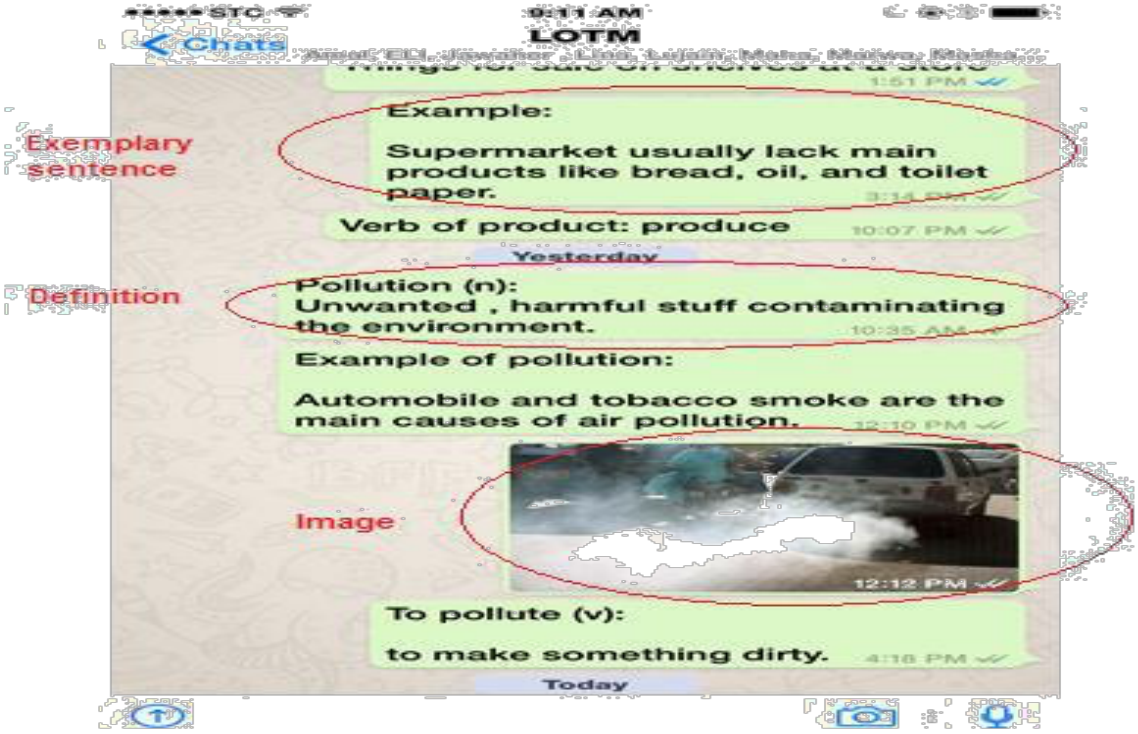
Just to play devil's advocate

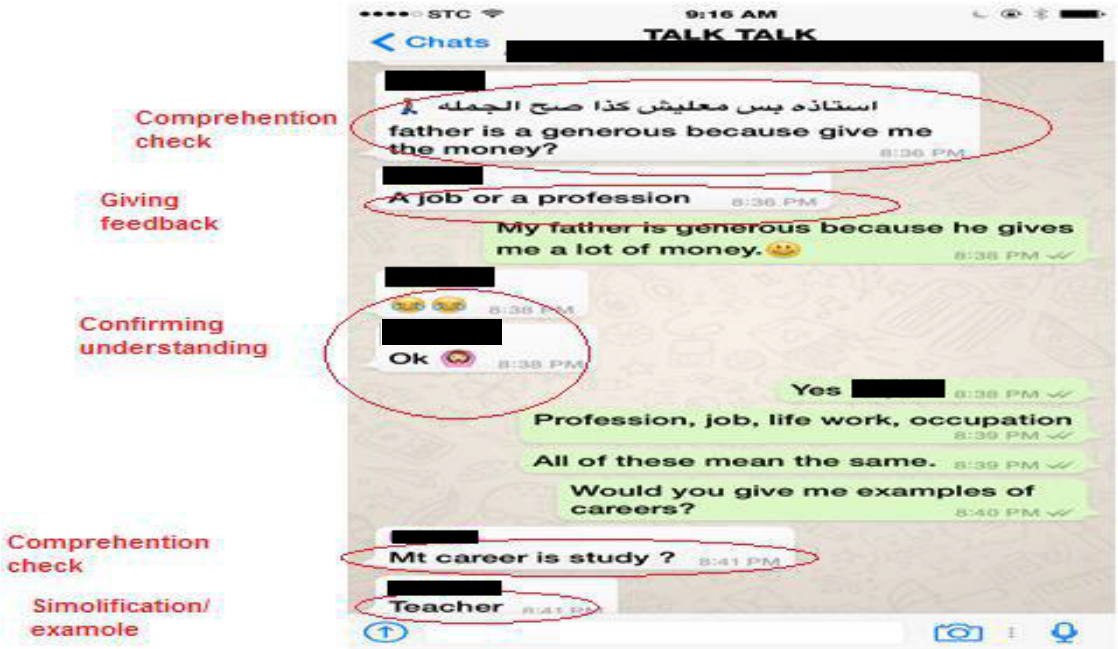
- what if I were to say (the opposite of what has just been discussed), how would you react/respond to that statement?

Could you perhaps go into some more detail with what you just said?

- What makes you say that? Could you provide a specific example?

Appendix H Sample of WhatsApp lessons





laboration/
xplanation

Appendix I

Interview Questions

The following interview questions mostly guided the interviews:

1. How did you find the experiment? Why?
2. Do you like the idea of using smart phones to learn English? What did you like or dislike about it?
3. How do you study new words by mobile phone?
4. What did you do with the messages once you received them?
5. What did you do if you find the content of the message difficult to understand/memorise?
6. Did you find receiving dozens of messages per day annoying?
7. How often did you join/interact with friends via WhatsApp group or any other social mobile applications ?
8. Did you feel shy/ embarrassed when other students correct your participation? Explain
9. How might the multimedia messages extend your learning?
10. How could using smart phone improve your language learning?
11. What are challenges mobile learning faces in future integration?

Appendix J **J.1 Vocabulary tests**

D.1 **before intervention, Pre-study test**

Name:……

ID:……..

Section:……..

Date:……..

30

Q1: Write an Arabic equivalent to each word:

1. Prefer: …….
2. Shop assistant: …….
3. Persuade:……..
4. Colleague: ……...
5. Disappointed:……...
6. Generous:…….
7. Discuss:……
8. Celebrity:……
9. Confident…….

Q2: Match each word with its definition:

A	B
1. Product	Unwanted, harmful stuff contaminating the environment
2. Discuss	Things to sell
3. Pollution	To put into proper order
4. Career	Speak with others about something
5. Arrange	A job that a person does for a living
6. Improve	Chance or possibility
7. Opportunity	To make something better
8. Colleague	Someone you work with

Q3 : Fill out the blank with an appropriate word from the box:

interesting-celebrity-generous-disappointed-prefers-prescription-discussion-helpfu

1. Ahmed donates money to the poor. He is …… .

2. Sarah likes chocolate more than caramel. She ……chocolates.

3. Our teacher's advice about how to study vocabulary was ……. .

4. Hayat Al-Fahad is a famous ……..

5. The …….about the exam's questions was useful.

6. The teacher was ……..by her students' bad scores on the final exam.

7. I was sick, so the doctor wrote a ……for me.

8. We received an …….. to Ahmad and Sara's Wedding.

Q4: Circle the correct word to complete the sentence:

1. The movie I saw yesterday was frightened/ frightening.

2. I was bored/ boring, so I decided to go shopping.

3. Ali's ambitious/ ambition to be rich led him to do anything to get money.

4. Shop assistant/ assist offered to send the exchanged table to home.

Q5: Put 2 of the following words in a sentence of your own:

Interesting/ generous/ celebrity/ persuade/ career/ arrange

1. ……

2. ……

J.2 Main study: pre-study, post-study, and retention tests

Vocabulary test (with answer key)

Question One

Select the correct spelling of the following words`:

1. a) resolf	b) rezolve	c) resoulve	d) resolve
2. a) lonjevity	b) longevity	c) longivity	d) laungivity
3. a) sentenarian	b) centinarian	c) centenarian	d) centeranian
4. a) contemborary	b) kontemporary	c) contemprory	d) contemporary
5. a) perpetual	b) perbetual	c) berpetual	d) perpshual

Question Two

Select the odd word out:

1. a) hero	b) leader	c) citizen	d) protagonist
2. a) chaos	b) disorder	c) confusion	d) tidiness
3. a) crucial	b) important	c) critical	d) trivial
4. a) division	b) cooperation	c) association	d) collaboration
5. a) concept	b) myth	c) idea	d) notion
6. a) practical	b) nostalgic	c) homesick	d) emotional
7) a) unintelligible	b) incomprehensible	c) illegible	d) unintentional

Question Three

Select the best word to complete the definition:

1. ……..is very boring because it has regular, repeated patterns.

a) Monotonous b) Hilarious c) Enormous d) Marvellous

2. ……. is to describe things that are different from each other, but when they go together, they make something even better.

a) Complimentary b) Commendatory c) Complementary d) Compensatory

3. …… means something that is equal or corresponds with another in value.

a) Equipment b) Equivalent c) Aquarium d) Acquainted321

4. If you describe something as …….., you mean that it is so exciting so that you cannot stop yourself from thinking about it.

a) distressing b) horrific c) irresistible b) melancholic

5. The …….. are people who have the power to make decisions and to make sure that laws are obeyed.

a) neighbourhoods b) majorities c) communities d) authorities

6. If you describe something as …….., it means it contains a hidden meaning or it is difficult to understand

a) overt b) obvious c) explicit d) cryptic

Question Four

Fill in the blank with a word that collocates with the underlined word:

1. We …….. a break every two hours.

a) do b) make c) take d) get .

2. I'm hoping that if I work hard, I'll ……. a promotion soon. It would be great to have a higher position with more responsibility.

a) do b) make c) take **d) get**

3. When someone phones to …… a complaint, you need to keep calm and sympathize with them as much as possible.

a) do b) make c) take d) get

4. You should always confirm appointments you ……on the phone by sending a follow-up email.

a) do b) make c) take d) get

5. You need to …….a lot of training to become a good programmer.

a) do b) make c) take d) get322

http://www.proprofs.com/quiz-school/story.php?title=collocation-quiz

1. I'd like to …….your attention to the high number of sales in July due to our Ramadan promotion.

a) draw b) give c) take

2. I'll be out of the office next week; I'm going to ……..a conference on climate change.

a) attend b) presence c)watch

3. Our company designs sophisticated business clothing for women. Our ……market is female executives aged 35-45.

a) commercial b) target c) preferred

4) Everyone agreed with the plan except for Mohammad, who ……a few strong questions.

a) put b) said c) raised

5. We have a partnership with that company, and we often do ……..ventures.

a) cooperate b) joint c) together

Question Five

Choose the correct form of the word to fit the given context

1. When it comes to weather, London is completely; a sunny day……. can turn to black and rainy all of the sudden.

a) unpredictability b) unpredictable

2. The exam was fairly …… enough; I finished it in less than hour.

a) straightforward b) straightforwardly

3. Species extinction is not a ……problem; it is very real.

a) hypothesis b) hypothetical

4. The painting has been done with …….attention to details.

a) meticulous c) meticulously

5. Oil prices fell this week to their lowest level in 14 months, ……. because of overproduction.

a) apparent b) apparently

6. …….. is a process by which two or more countries join together and become one country.

a) Unified d) unification

Question Six

Select the best word to complete the sentences

1. He slammed the bedroom door and *fled*

a) fled b) simulated c) flickered

2. Before paying any effort to *decentralize* population, a good infrastructure plan has to be adopted in minor cities.

a) compliment b) predict c)decentralize

3. Some of the potato chips snacks *resemble* barbecue flavour.

a) resemble b) stimulate c) coordinate

4. The company's employees have *dwindled* from over 4000 to a few hundred.

a) dwindled b) contradicted c) restricted

Question Seven

Read the following sentences, and then circle the correct answer for each statement:

1. She tried to ***undermine*** my efforts by complaining about me to my boss. The word undermine in the sentence is closest in meaning to:

a) to sustain b) to make less likely to succeed c) to promote

2. The fridge should work just fine once it is ***unplugged*** and cleaned out. The word **unplugged** in the sentence does **NOT** mean:

a) disconnected b) removed from an outlet c) turned on

3. The city is prepared for the annual tourist invasion. The word invasion in the sentence is closet in meaning to:

a) attack b) offense c) arrival

4. The technology allows data to be **transmitted** by cellular phones. The word **transmitted** in the sentence is closest in meaning to:

a) to be transformed b) to be conveyed c) to be verified

5. The new film is a **sequel** to the very successful comedy of Mr. Ben. The word **sequel** does **NOT** mean:

a) consequence b) overview c) continuation

6. Nobody knows **precisely** how many people are still living in Syria. The word **precisely** is closest in meaning to:

a) nearly b) accurately b) approximately

7. The idea of living in a **perpetual** peace is interesting, but hardly practical. The word **perpetual** is closest in meaning to:

a) endless b) repeated c) occasional

8. Women are always **excluded** from any political decisions. The word **excluded** does not mean:

a) eliminated b) involved b) ignored325

9. Perhaps she should have a more **contemporary** style. **Contemporary** does not mean:

a) current b) modern c) antique

10. In schools, monthly fire drills **simulate** emergencies to ensure school preparedness. The word simulate is closest in meaning to:

a) control b) stimulate c) imitate

11. Diamonds have little **intrinsic** value and their price depends almost on their scarcity. The word **intrinsic** in the sentence is closest in meaning to:

a) extrinsic b) real c) extraneous

12. Women **outnumber** men in the recent population statistics of this country. The word **outnumber** does **NOT** mean:

a) to exceed b) to be greater c) to outperform

Appendix L Research instruments relating to each research question together with advantages and disadvantages of each instrument.

Instrument	Advantages	Disadvantages	Research Question Answered
Questionnaires	• Practical • Large amounts of info obtained • Easily quantified through SPSS • Can be used to compare and contrast other research methods	• Is inadequate as a single measure • Can lack validity • Truthfulness of respondents is questionable • Only obtains a limited amount of information	Question 1
Focus Groups	• Conversation stays on track • Participants can interact with each other • Topics can be easily modified as appropriate • Participants become more involved in the research	• Can be influenced by one or two dominant people • Can be difficult to deal with sensitive topics • Are somewhat artificial and this influences responses	Question 1, 2, 3 and 4 -Give information about smart phone ownership -Introduce the intervention (Teacher's and learners' roles
Interviews	• Misunderstandings are easily clarified • Rapport can be developed more easily, leading to more detailed responses • Candidates can be carefully selected, thus saving time and money • High level of flexibility	• Difficult to analyse if used as a single instrument • Time consuming • Requires excellent interviewing skills • Biases of interviewer may have an impact	Question 1, 2,3 and 4 -Give information about smart phone ownership -Introduce the intervention (Teacher's and learners' roles)
Content analysis and observation	• Provides detailed information • provide insight into	• Time consuming to analyse • Provides lots of	Question 2 and 3

	more personal information about individual behaviours	data, researcher has to sift through	

Appendix M Examples of coding system in NVivo

Focus groups and interviews		
Pre-determined Code	Emergent sub-code	Ex. of key words
Reasons for learning English	Proceed academically	• Success • Pass exam • Study easily
	Employability	• Job hunting • Earn more money • Job position • Prestigious position
	Globalisation	• International business • Business reports • Open up to the world • Learn abroad • Become updated
	Self-image	• Confident • Project image • Educated • Classy
	Context-awareness Interest in English culture	• English song • English movies • English novels • English literature
	Travel around the world	• Europe • America • East
language learning beliefs/attitudes	Difficult	• Consumes time • Need effort/tiresome • Needs memorization • Quickly forgotten
	Boring	• Outdated • Tedious • Not interesting
vocabulary learning approach	Deliberate /planned	• Memorise • Write words • Say words
	Incidental	• Pick up • By product • While other activities

Mobile phone learning Expectation	Useful	• May be interesting • May be up-to-date
	Simple	• May be easy to use • May be not complicated
	Does not know	• Don't know • Have no idea • May work/ may not

L.1.2

Acceptance Mobile learning			
Attitude of language learning via mobile phone	Pre-determined codes	Emergent sub-codes	Ex. of key words
	Easy	____	• Simple • Doesn't need training • Handy
	useful	Enjoyable	• enjoyable • Interesting • Fun
		Up-to-date	• Updated • New • Modern
		authentic	• Real • On air • Life
	Not useful	Distractive	• Avoid the new • Complicated • Multiple resources to study from

L.2 **Exemplary extracts of NVivo coding**

L.2.1 Code (Motivation to learn English)

Sub-codes: Academic progress, globalisation, self esteem

Academic progress

Source: Male N1

Improving my language level is important to **proceed in my college** since English is the medium of study.

Source: Female N3

I am experiencing difficulties in my progression in the college….I think **if I could improve my English I would proceed** simply and pass exams.

Employability

Source: Male N7

It's important to the extent that without English qualifications, you will not be accepted in job market even you are keen in your specialty. Some jobs don't use English, yet employers entail proficiency in English language as one of the conditions for job acceptance.

Source: Male N11

English facilitates employability in **job market**….. It has significant influence on earnings.

Source: Female N2

English is important if you want to work and have a **good position in your work** …. Nowadays, all employers require high language proficiency.

Globalisation

Source: Male N9

Globalisation and English are pull factors for one another……..While, English connect people worldwide together and helps in exchanging economics and culture, globalisation, on the other hand, strengthen the position of English in different countries and cultures.

Source: Female N4

English is the international language which enables **people around the world with different languages and cultures to communicate and understand each other, to exchange knowledge, and to run business effectively.**

Source: Male N3

I am eager to learn English fluently as fast as possible … I want to join my brother and study for my postgraduate degrees in America . …**Studying abroad** is my target after graduating.

Source: Male N5

Even without studying abroad, **reading international articles written in English updates you with new advances in any field around the world**……That is why English is important.

Self-esteem

Source: Female N10

…..Even the society respects people who speak English….English speakers **look more educated. ….**Some people tend to scatter English words in their speech to let others think they are educated or from a higher class.

Source: Female N14

> My parents always encourage me to learn English……. **They think English speakers as more successful, self-esteemed, and classy.**

Source: Male N12

> English is everything…..;If you know how to speak and write English, you will have selfesteem, you would look better educated…….to the extent that **others would be convinced to your argument** more easily particularly when you insert some English words while conversing.

L.3 **Code: Expectation of mobile phone learning**

L.3.1 Sub-codes: interesting, easy- useful- up-to-date-boring- complicated difficult.

Source: Male N12

" I expect that we must integrate technology to be updated **and open up to the world."**

Source: Female N11

"I think technology would complicate **things."**

Source: Male N1

"We tried using computer labs before, they were boring and difficult to use….. **If mobile phone technology works in a similar pattern, I won't use it if it is optional"**

Source: Male N2

"**My worry is that it would be a distraction …… we would study from many resources…….there would be no focusing."**

Source: Female N14

“ I expect that we must use technology to be more civilized”

Source: Male N9

“I think technology would make learning **difficult ……** I think it would be a **distraction** ……there would be no focusing.”

L.4 **Code (Interactivity)**

Source: Female N1

Group **discussions** are easy… real ….and allows for real **talking** with friends and teacher. ..I learned from the **give and take** between teacher and learners….I think the time spent on this firms the words in my memory…unlike memorization.

Source: Male N5

We become more active students……We are kept **busy asking questions**, **giving comments, giving opinions, say what is difficult, asking for explanation**…. And this I think will increase our chances to remember words……Its unlike classroom in which we listen to the teacher and take notes.

Source: female N12

WhatsApp Chat helped us to **learn in group**…..We **talk together**…I **learn from what my friends say**…..i can **ask them questions and they reply**…..we can **discuss things** together

Source: Male N13

Communication with friends and the teacher is the best thing….we **learn from each other**…**weak**

learners can learn from good ones.